GRUNDIG

DVD Service Manual

GDR 6460 VCR

GMK3500

VHS

DVD VIDEO

COMPACT disc DIGITAL VIDEO

MP3

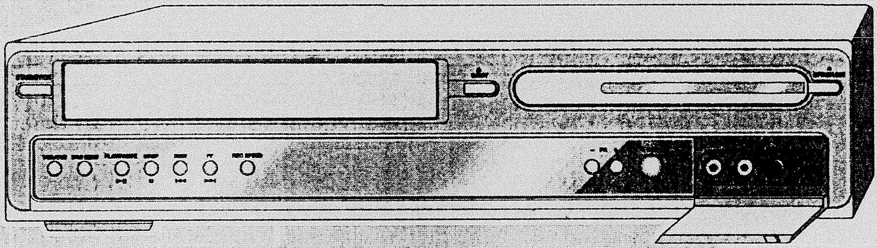
COMPACT disc DIGITAL AUDIO

DOLBY DIGITAL

dts DIGITAL OUT

RW DVD+ReWritable

RW DVD+R



Zusätzlich erforderliche Unterlagen für den Komplettservice
Additionally required Service Documents for the Complete Service

Service
Manual

Sicherheit
Safety

Materialnr./Part No.
720108000001

NUR FÜR INTERNEN GEBRAUCH
FOR INTERNAL USE ONLY

Materialnummer/Part Number 720100483500
Änderungen vorbehalten/Subject to alteration
H-S41 • 0505
http://www.grundig.com

Es gelten die Vorschriften und Sicherheitshinweise gemäß dem Service Manual "Sicherheit", Materialnummer 720108000001, sowie zusätzlich die eventuell abweichenden, landesspezifischen Vorschriften!

The regulations and safety instructions shall be valid as provided by the "Safety" Service Manual, part number 720108000001, as well as the respective national deviations.

Inhaltsverzeichnis

Seite

Allgemeiner Teil .... 1-2...1-16
Allgemeine Hinweise 1-2
Technische Daten 1-3
Messgeräte / Messmittel 1-3
Service-Hinweise 1-4
VCR-Laufwerk 1-5
VCR-Laufwerk-Einstellungen 1-6
Bedienhinweise 1-8
– Auf einen Blick 1-8
– Kindersicherung 1-10
– Sondereinstellungen 1-11
System-Informationen 1-16
Software-Upgrade 1-16

Platinenabbildungen und Schaltpläne .... 2-1...2-38
Bedieneinheiten 2-1
Netzteilplatte 2-4
Chassisplatte 2-6
– Ablaufsteuerung 2-12
– Video/Chroma, Standard-Ton 2-14
– HiFi-Ton, IN/OUT 2-16
– ADC/DAC-Converter 2-18
– Tuner, Frontend 2-20
DVD-Platte 2-21
– Prozessor 2-21
– Terminator 2-23
– SDRAM 2-24
– Interface 2-25
– Flash, IDE-Interface 2-26
– 1394 Firewire, USB (Option) 2-27
– Netzteil 2-28
– AD-Converter 2-28
Oszillogramme 2-29
Fehlersuchdiagramme 2-32

Explosionszeichnung und Ersatzteillisten .... 3-1...3-4

Table of Contents

Page

General Section .... 1-2...1-16
General Notes 1-2
Technical Data 1-3
Test Equipment / Jigs 1-3
Service Hints 1-4
VCR Drive Mechanism 1-5
VCR Drive Mechanism Adjustment 1-7
Operating Hints 1-12
– Overview 1-12
– Child lock 1-14
– Special Settings 1-15
System Informations 1-16
Software Upgrade 1-16

Layout of PCBs and Circuit Diagrams .... 2-1...2-38
Keyboard Control Units 2-1
Power Supply Board 2-4
Chassis Board 2-6
– Sequence Control 2-12
– Video/Chroma, Standard Sound 2-14
– HiFi Sound, IN/OUT 2-16
– ADC/DAC Converter 2-18
– Tuner, Frontend 2-20
DVD-Board 2-21
– Processor 2-21
– Terminator 2-23
– SDRAM 2-24
– Interface 2-25
– Flash, IDE Interface 2-26
– 1394 Firewire, USB (Option) 2-27
– Power Supply 2-28
– AD Converter 2-28
Oszillograms 2-29
Troubleshooting 2-32

Expolded View and Spare Parts Lists .... 3-1...3-4

Allgemeiner Teil

Allgemeine Hinweise

Vor dem Öffnen des Gehäuses den Netzstecker ziehen!

Achtung: ESD-Vorschriften beachten

Leitungsverlegung
Bevor Sie die Leitungen und insbesondere die Masseleitungen lösen, muss die Leitungsverlegung zu den einzelnen Baugruppen beachtet werden.
Nach erfolgter Reparatur ist es notwendig, die Leitungsführung wieder in den werkseitigen Zustand zu versetzen um evtl. spätere Ausfälle oder Störungen zu vermeiden.

General Section

General Notes

Before opening the cabinet disconnect the mains plug!

Attention: Observe the ESD safety regulations

Wiring
Before disconnecting any leads and especially the earth connecting leads observe the way they are routed to the individual assemblies.
On completion of the repairs the leads must be laid out as originally fitted at the factory to avoid later failures or disturbances.

Durchführen von Messungen

Bei Messungen mit dem Oszilloskop an Halbleitern sollten Sie nur Tastköpfe mit 10:1 - Teiler verwenden. Außerdem ist zu beachten, dass nach vorheriger Messung mit AC-Kopplung der Koppelkondensator des Oszilloskops aufgeladen sein kann. Durch die Entladung über das Messobjekt können Bauteile beschädigt werden.

Messwerte und Oszillogramme

Bei den in den Schaltplänen und Oszillogrammen angegebenen Messwerten handelt es sich um Näherungswerte!

Carrying out Measurements

When making measurements on semi-conductors with an oscilloscope, ensure that the test probe is set to 10:1 dividing factor. If the previous measurement was made on AC input, please note that the coupling capacitor in the oscilloscope will be charged. Discharge via the item being checked can damage the components.

Measured Values and Oscillograms

The measured values given in the circuit diagrams and oscillograms are approximates!

Technische Daten

Allgemein

Netzspannung: 230V~, 50/60Hz
Leistungsaufnahme:
- Betrieb: ca. 32W
- Stand-by: ≤5,8W

Umgebungstemperatur: +5°C bis +35°C
Abmessungen B x H x T: 430 x 91 x 354mm
Gewicht: 6,2kg
Wiedergabe-Norm: PAL 50Hz, 625 Zeilen

Video-Spezifikation

Video-System: VHS, 1/2" Video - Cassettenrecorder
Bandgeschwindigkeit: 2,339cm/s (Standard play)
Aufzeichnungsgeschwindigkeit: 4,84m/s (Standard play)
Video/Audioköpfe: Video 4, Audio 2
Frequenzgang HiFi: 20Hz-20kHz
Audio-Rauschabstand (bei 1kHz): ≥65dB
Video-Rauschabstand (bei SP): ≥43dB

CD/DVD-Spezifikation

Aufnahme-Medien: DVD+R, DVD+RW
Aufnahmequalität und Dauer auf einem 4,7GB DVD-Rohling:
- HQ: sehr hohe Aufnahmequalität 60 Minuten
- SP: hohe Aufnahmequalität 120 Minuten
- EP: besser als VHS Bildqualität 240 Minuten
- SLP: VHS Bildqualität 360 Minuten

Wiedergabe-Medien-Formate: DVD-Video, Audio-CD, Video-CD (VCD 1.0/1.1/2.0), S-Video-CD, CD-ROM (DivX©Video, MP3, JPEG, Kodak Picture CD)
Laser: Halbleiter-Laser
- Wellenlänge für DVD: 650nm
- Wellenlänge für CD: 780nm

Audio Format:
- Digital: MPEG2/Dolby Digital, PCM, DTS, MPEG3
- Analog: Stereoton, Dolby Pro Logic

Audio-Signal Analog:
- DVD: 48/96kHz 4Hz-22/44kHz
- Video-CD: 44,1kHz 4Hz-20kHz
- Audio-CD: 44,1kHz 4Hz-20kHz
- Rauschabstand (bei 1kHz): ≥90dB
- Dynamik (bei 1kHz): ≥90dB

Technical Data

General

Mains voltage: 230V~, 50/60Hz
Power consumption:
- Operation: ca. 32W
- Standby: ≤5,8W

Ambient temperature: +5°C to +35°C
Dimensions W x H x L: 430 x 91 x 354mm
Weight: 6.2kg
Playback standard: PAL 50Hz, 625 lines

Video specification

Video System: VHS, 1/2" video cassette recorder
Tape speed: 2.339cm/s (Standard play)
Head to tape speed: 4.84m/s (Standard play)
Video/Audio Head: video 4, audio 2
Frequency range HiFi: 20Hz-20kHz
Audio Signal-to-noise ratio (at 1kHz): ≥65dB
Video Signal-to-noise ratio (at SP): ≥43dB

CD/DVD specification

Record media: DVD+R, DVD+RW
Recording quality and time on a 4.7 GB blank DVD:
- HQ: Very high picture quality 60 minutes
- SP: High picture quality 120 minutes
- EP: Better than VHS picture quality 240 minutes
- SLP: VHS picture quality 360 minutes

Playback media formats: DVD-Video, Audio-CD, Video-CD (VCD 1.0/1.1/2.0), S-Video-CD, CD-ROM (DivX©Video, MP3, JPEG, Kodak Picture CD)
Laser: Semiconductor laser
- Wavelength for DVD: 650nm
- Wavelength for CD: 780nm

Audio format:
- Digital: MPEG2/Dolby Digital, PCM, DTS, MPEG3
- Analogue: Stereo sound, Dolby Pro Logic

Audio Signal Analogue:
- DVD: 48/96kHz 4Hz-22/44kHz
- Video-CD: 44.1kHz 4Hz-20kHz
- Audio-CD: 44.1kHz 4Hz-20kHz
- Signal-to-noise ratio (at 1kHz): ≥90dB
- Dynamic (at 1kHz): ≥90dB

Messgeräte / Messmittel

Regeltrenntrafo
Stabilisiertes Netzgerät
Digitalmultimeter
Zweikanaloszilloskop mit Tastköpfen 10:1
Farbgenerator
Tongenerator
Nylonhandschuhe
Schraubendreher (eingesägt)
Kreuzschlitzschraubendreher (Ø 4,5mm)
Drehmomentcassette
Testcassette (Schwarzweiß)
- Testbild für Luminanzauflösung
- Längsspur-Ton: 6kHz

Test Equipment / Jigs

Variable isolating transformer
Stabilized power supply
Digital multimeter
Dual channel oscilloscope with testprobe 10:1
Colour generator
AF generator
Nylon gloves
Screwdriver (slotted)
Crosstip screwdriver (Ø 4.5mm)
Torque cassette
Test cassette (black & white)
- Luminance test pattern for video resolution
- Longitudianal track sound: 6kHz

Service-Hinweise / Service Hints

Ausbauhinweise / Disassemly Hints

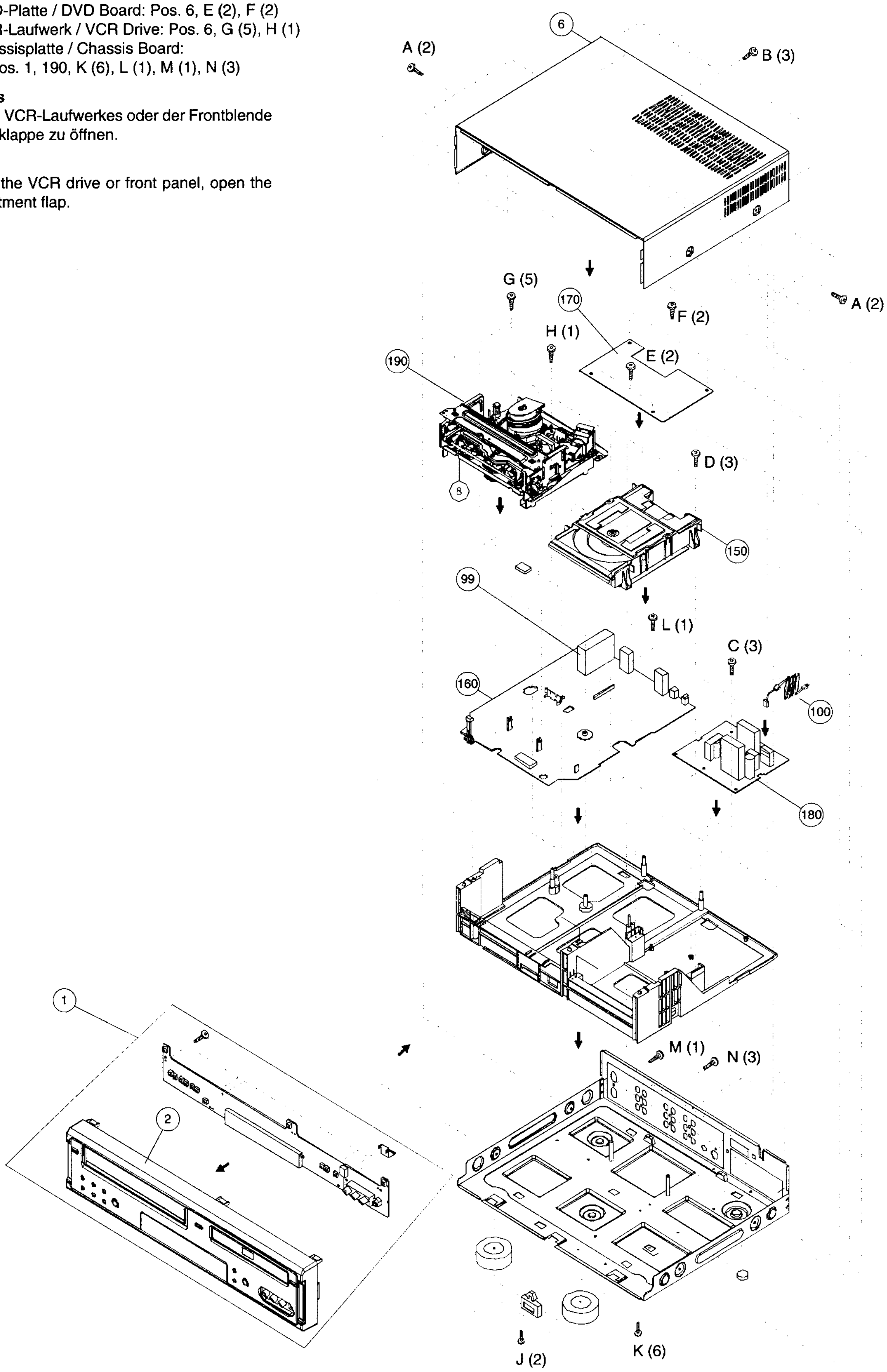
- Pos. 6, Gehäuseoberteil / Cabinet Upper Part: A (4), B (3)
- Pos. 1, Frontblende / Front Panel: Pos. 6, J (2), Rasthaken lösen / Release the catches
- Pos. 180, Netzteil / Power Supply Board: Pos. 6, C (3)
- Pos. 150, DVD-Laufwerk / DVD Drive: Pos. 6, E (4)
- Pos. 170, DVD-Platte / DVD Board: Pos. 6, E (2), F (2)
- Pos. 190, VCR-Laufwerk / VCR Drive: Pos. 6, G (5), H (1)
- Pos. 160, Chassisplatte / Chassis Board:
  Pos. 6, Pos. Pos. 1, 190, K (6), L (1), M (1), N (3)

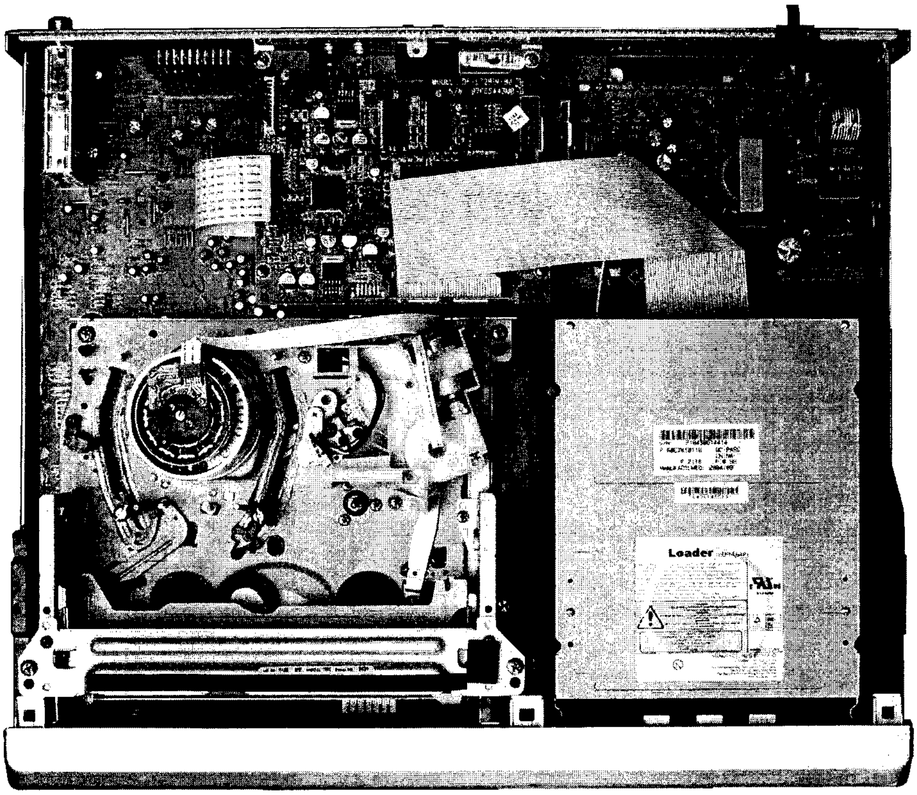
Montagehinweis

Beim Einbau des VCR-Laufwerkes oder der Frontblende ist die Cassettenklappe zu öffnen.

Reassembly

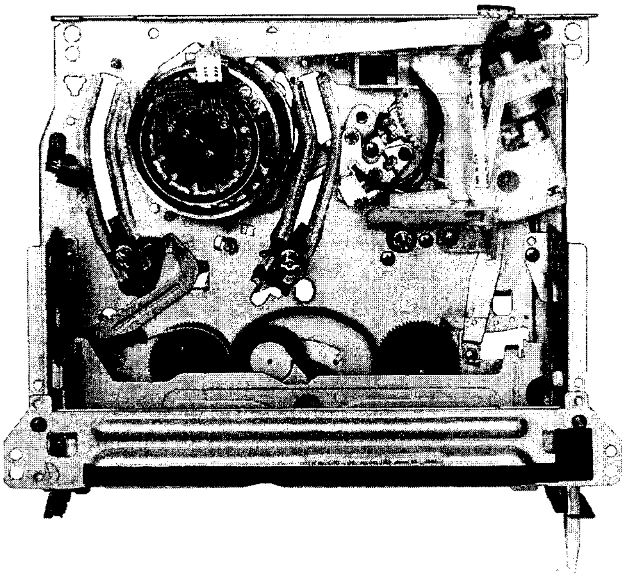
When assembly the VCR drive or front panel, open the cassette compartment flap.

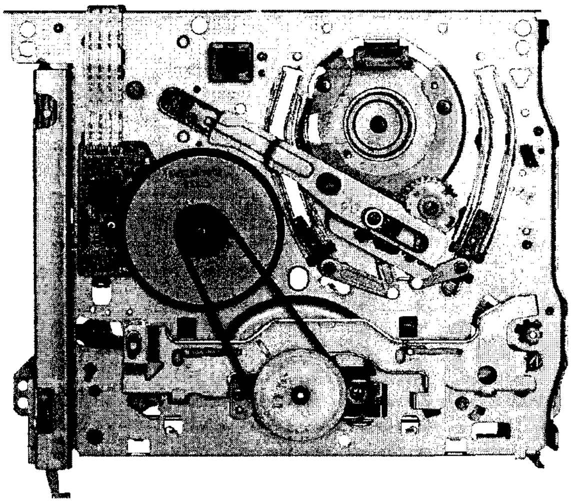


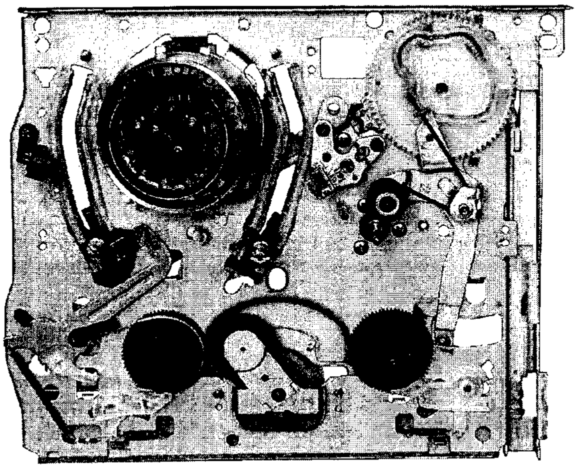


VCR-Laufwerk / VCR Drive Mechanism

VCR-Laufwerkstellung / VCR Drive position **"Eject"**







VCR-Laufwerk-Einstellungen

1. Umlenkrollen der Fädelschlitten

- Cassette E120 wiedergeben.
- Umlenkrollen ① / ② (Fig. 1) bei Bedarf so einstellen, dass das Band an diesen nicht bördelt.

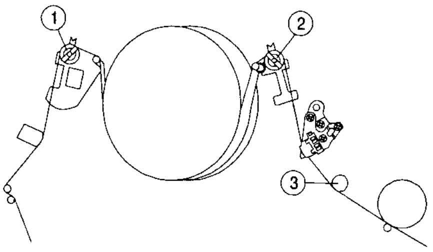


Fig. 1

2. Neigungswinkel des Kombikopfes

- Cassette E120 wiedergeben.
- Neigungswinkel des Kombikopfes mit der Schraube ④ (Fig. 3) so einstellen, dass das Band mittig am Bandführungsbolzen ③ (Fig. 1 / 2) vorbeiläuft.

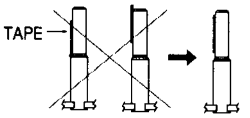


Fig. 2

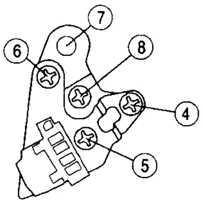


Fig. 3

3. Höhe und Azimut des Kombikopfes

- Oszilloskop am Chinch-Ausgang "AUDIO OUT L/R" anschließen.
- Testcassette (Standardton-Audiosignal 6kHz) wiedergeben.
- Mit der Höheneinstellschraube (⑤, Fig. 3) maximale Ausgangsspannung einstellen.
- Mit der Azimuteinstellschraube (⑥, Fig. 3) maximale Ausgangsspannung einstellen.

4. X-Abstand

- Oszilloskop mit Tastkopf 10:1 an Steckerkontakt P502-4 anschließen.
- Testcassette wiedergeben.
- Tracking-Taste "–" (1) mindestens 15 Sekunden gedrückt halten. Anschließend die Tracking-Taste "+" (3) 24 mal kurzzeitig drücken (Tracking-Mittenposition).
- Grobabgleich:
  Kreuzschlitz-Schraubendreher (Ø 4,5mm) in das Loch ⑦ (Fig. 3) stecken. Schraube ⑧ etwas lösen. Maximale Amplitude der FM-Pakete einstellen durch Verschieben des Kombikopfes in der Einstellmitte (Schraubendreher möglichst senkrecht) mit dem Kreuzschlitz-Schraubendreher. Schraube ⑧ festdrehen.
- Feinabgleich:
  Tracking-Taste "–" (1) mindestens 15 Sekunden gedrückt halten (Tracking Minimum). Amplitude der FM-Pakete merken.
  Tracking-Taste "+" (3) mindestens 15 Sekunden gedrückt halten(Tracking Maximum). Die Tracking-Position mit der größeren Amplitude der FM-Pakete mit einer der Tracking-Tasten "–" (1) / "+" (3) anwählen.
  Kreuzschlitz-Schraubendreher (Ø 4,5mm) in das Loch (⑦, Fig. 3) stecken. Schraube ⑧ etwas lösen. Amplitude der FM-Pakete der geringeren Amplitude angleichen durch Verschieben des Kombikopfes mit dem runden Kreuzschlitz-Schraubendreher. Schraube ⑧ festdrehen.
  Pegel der FM-Pakete bei Tracking-Position Maximum und Minimum nochmals prüfen und gegebenenfalls anpassen (Feinabgleich).

5. Bremsbandeinstellung

- 2 Hebel ⑨ (Fig. 4) und Cassettenschacht nach innen schieben.
- Gerät in dem Moment vom Netz trennen, wenn der Bandzugfühler die äußerste Position erreicht (rechter Wickelteller dreht sich dabei).
- Bremsband ⑫ (Fig. 5) so einstellen, dass das Loch ⑩ des Bandzugfühlers über dem Loch ⑪ des Laufwerkchassis ist.

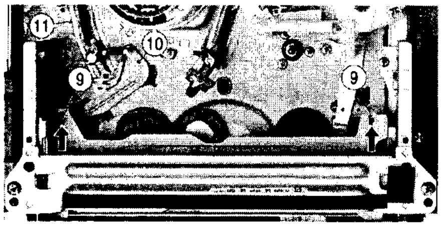


Fig. 4

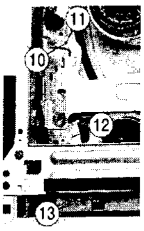


Fig. 5

6. Bandzugeinstellung

- Drehmomentcassette wiedergeben und Wert notieren.
- Die Bremskraft des linken Wickeltellers sollte im Bereich von 3,5...5,2mNm (35...52g-cm) sein.
- Zum Abgleich die Drehmomentcassette entnehmen, Feder ⑬ (Fig. 5) umhängen und Vorgang wiederholen.

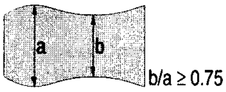
7. Bandlaufeinstellung

- Zweikanaloszilloskop (Triggerung – Kanal A) mit den Tastköpfen 10:1 wie folgt anschließen:
  - Kanal A: Kopfumschaltimpuls – Steckerkontakt P502-3
  - Kanal B: FM-Pakete – Steckerkontakt P502-4

7.1 Grobabgleich

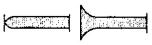
- Testcassette wiedergeben.
- Die Umlenkrollen ① / ② (Fig. 1) so einstellen, dass die FM-Pakete an der Bandeinlaufseite und der Bandauslaufseite den Grenzwert b / a ≥ 0,75 (Fig. 6) einhalten.

Fig. 6

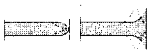


5.2 Feinabgleich

- X-Abstand einstellen (Punkt 4).
- Testcassette wiedergeben.
- Das Tracking manuell so einstellen, dass das Bild gerade zu rauschen beginnt.
- Die Umlenkrollen ① / ② (Fig. 1) so einstellen, dass die Amplitude der FM-Pakete möglichst geradlinig verläuft.
  - Das Band läuft nach oben weg:

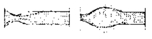


linke Umlenkrolle ① (Fig. 1) im Uhrzeigersinn drehen.

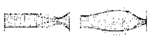


rechte Umlenkrolle ② (Fig. 1) im Uhrzeigersinn drehen.

  - Das Band läuft nach unten weg:



linke Umlenkrolle ① (Fig. 1) entgegen dem Uhrzeigersinn drehen.



rechte Umlenkrolle ② (Fig. 1) entgegen dem Uhrzeigersinn drehen.

7.3 Kontrolle

- Testcassette wiedergeben.
- Taste "Bildsuchlauf rückwärts" drücken und nach 15 Sekunden Taste "Wiedergabe". Nach weiteren 3 Sekunden muss die Amplitude der FM-Pakete wieder das Maximum erreichen und deren Hüllkurve geradlinig sein. Gegebenenfalls sind die Umlenkrollen ① / ② (Fig. 1) nachzustellen.
- Neigungswinkel des Kombikopfes kontrollieren (Punkt 2).
- Höhe und Azimut des Kombikopfes kontrollieren (Punkt 3).
- X-Abstand kontrollieren (Punkt 4).

8. Kopfradlagengeber

- Testcassette wiedergeben.
- 2V Gleichspannung (externes Netzteil) an P502-5 einspeisen.
- Taste "REC" auf der Fernbedienung drücken. Während dem automatischen Abgleich zuckt das Bild kurzzeitig.

VCR Drive Mechnism Adjustments

1. Reverse Rollers of the Threading Roller Units

- Play a E120 cassette.
- Re-adjust the reverse rollers ① / ② (Fig. 1) if necessary so that the tape does not touch the top or bottom edge of the rollers.

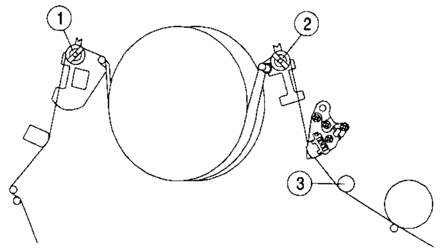


Fig. 1

2. Tilt of the A/C Head

- Play a E120 cassette.
- Adjust the tilt of the A/C head with screw ④ (Fig. 3) so that the tape passes the tape guide pin ③ (Fig. 1 / 2) in the middle between the top and bottom edge.

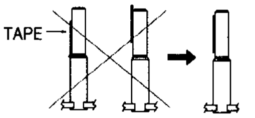


Fig. 2

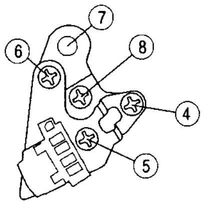


Fig. 3

3. Height and Azimuth of the A/C Head

- Connect the oscilloscope to chinch output "AUDIO OUT L/R".
- Play the test cassette with the 6kHz Standard Sound audio signal recording.
- Set the height adjustment screw (⑤, Fig. 3) for maximum output voltage.
- Set the azimuth adjustment screw (⑥, Fig. 3) for maximum output voltage.

4. X-Value

- Connect oscilloscope with 10:1 test probe to connector contact P502-4.
- Play the test cassette.
- Press tracking button "–" (1) min. 15 seconds. Afterwards press button "+" (3) for tracking step by step 24 times (middle position of tracking).
- Coarse adjustment:
  Put a crosstip screwdriver (Ø 4.5mm) in hole ⑦ (Fig. 3). Loosen screw ⑧. Adjust A/C head with the crosstip screwdriver in mechanical mid-position (screw driver as vertical as possible) for maximum FM packages. Tighten screw ⑧.
- Fine adjustment:
  Press tracking button "–" (1) min. 15 seconds (tracking minimum). Note the value of FM packages.
  Press tracking button "+" (3) min. 15 seconds (tracking maximum). Select the tracking position with the higher FM packages with tracking buttons "–" (1) / "+" (3).
  Put a crosstip screwdriver (Ø 4.5mm) in hole ⑦ (Fig. 3). Loosen screw ⑧. Adjust A/C head with the crosstip screwdriver for equal FM package level. Tighten screw ⑧.
  Check level of FM packages at tracking minimum and maximum position and if necessary adjust again (fine adjustment) .

5. Adjusting the Brake Band

- Slide 2 levers ⑨ (Fig. 4) and cassette compartment to inside.
- Disconnect the unit from mains at the moment when the tape tension lever reaches the outside position (right reel is turning).
- Adjust brake band ⑫ (Fig. 5) so that the hole ⑩ of tape tension lever is congruent to the hole ⑪ of the drive chassis.

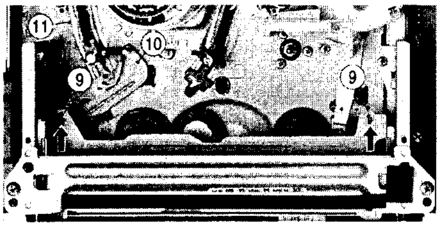


Fig. 4

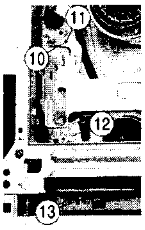


Fig. 5

6. Adjusting the Tape Tension

- Play the torque cassette and note the value.
- The torque of the left reel should be in area 3,5...5,2mNm (35...52g-cm).
- For adjustment eject torque cassette, change the hook-on position of the tension spring ⑬ (Fig. 5) and check again.

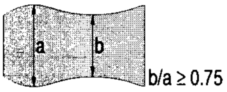
7. Adjusting the Tape Path

- Connect the 10:1 test probes of the dual-channel oscilloscope (triggering channel A) as follows:
  - Channel A: head switching pulse – connector contact P502-3
  - Channel B: FM envelope – connector contact P502-4

7.1 Coarse adjustment

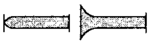
- Play the test cassette.
- Adjust the reverse rollers ① / ② (Fig. 1) so that the FM packages at the tape lead-in and lead-out side do not exceed the limit value b / a ≥ 0.75 (Fig. 6).

Fig. 6

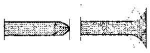


7.2 Fine adjustment

- Set the X-value (point 4).
- Play the test cassette.
- Set the tracking position manually so that noise just starts to appear in the picture.
- Set the reverse rollers ① / ② (Fig. 1) so that the amplitude of the FM packages is as flat as possible.
  - Tape riding over the upper edge:

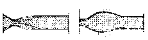


turn the left reverse roller ① (Fig. 1) clockwise

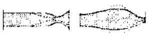


turn the right reverse roller ② (Fig. 1) clockwise

  - Tape riding over the lower edge:



turn the left reverse roller ① (Fig. 1) counterclockwise



turn the right reverse roller ② (Fig. 1) counterclockwise

7.3 Check

- Play the test cassette
- Press the "picture search reverse" button followed by the "play" button after 15 seconds. After another 3 seconds the FM packages must recover their maximum amplitude and flat envelope. If necessary, re-adjust the reverse rollers ① / ② (Fig. 1).
- Check the tilt of the A/C head (point 2).
- Check the height and azimuth of the A/C head (point 3).
- Check the X-value (point 4).

8. Head Position Indicator

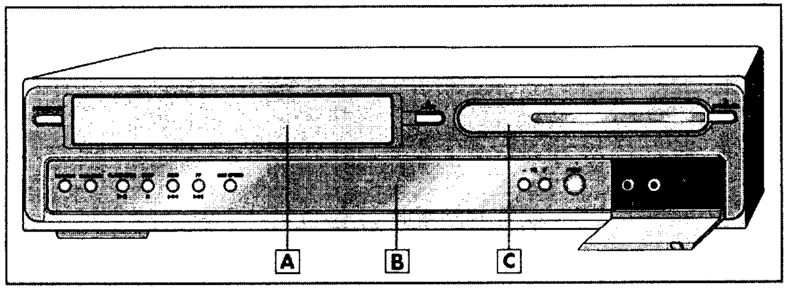
- Play the test cassette.
- Feed in a DC voltage 2V (external supply) at P502-5.
- Press button "REC" at the remote control. The picture jitters for a short time during the automatical adjustment.

Bedienhinweise

Dieses Kapitel enthält Auszüge aus der Bedienungsanleitung.
Weitergehende Informationen entnehmen Sie bitte der gerätespezifischen Bedienungsanleitung, deren Materialnummer Sie in der entsprechenden Ersatzteilliste finden.

AUF EINEN BLICK

Die Vorderseite des DVD/VCR-Recorders

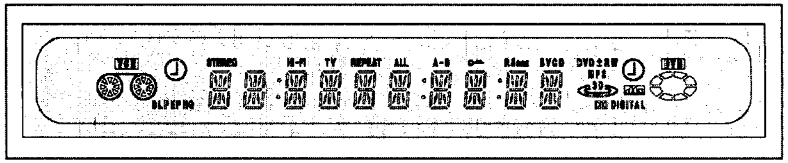


STANDBY/ON	Schaltet den DVD/VCR-Recorder aus Stand-by ein und wieder aus.
A	Cassettenfach.
B	Anzeige.
▲ EJECT	Zum Ausschieben der Videocassette.
C	Schublade für CD-Medien.
▲ OPEN/CLOSE	Zum Öffnen und Schließen der Disc-Schublade.
VCR/DVD	Schaltet die Tasten am Gerät um für VCR-Bedienung oder DVD-Bedienung.
DISC MENU	Ruft während der Wiedergabe das Discmenü einer Disc auf.
PLAY/PAUSE ▶II	Startet die Wiedergabe einer Disc oder einer Videocassette; während der Wiedergabe Standbild und Standbildfortschaltung bei DVD+RW/DVD+R, DVDs, Video-CDs und Videocassette; Pause bei MP3-CDs, JPEG-CDs, KODAK Picture-CDs und Audio-CDs; währende der Aufnahme Aufnahmepause bei einer Disc oder Videocassette.
STOP ■	Beendet Wiedergabe und Aufnahme.
REW FF I◀◀ ▶▶I	Wählen während der Wiedergabe den vorherigen/nächsten Titel oder Abschnitt der Disc; wählen während der Wiedergabe Bildsuchlauf bei der Videocassette; Nach Stopp, spulen die Videocassette vor oder zurück.
REC SPEED	Wählt die Aufnahmegeschwindigkeit.
- PR +	Wählen Fernseh-Programme und Programmquellen, »-« abwärts , »+« aufwärts.

AUF EINEN BLICK

● REC	Startet die Aufnahme der Disc und der Videocassette und gibt die Ausschaltzeit (bei Disc-Betrieb in 15 Minuten-Schritten, bei VCR-Betrieb in 30 Minuten-Schritten) ein.
AV.F VIDEO L AUDIO R	Bild-/Ton-Eingangsbuchsen, zum Anschließen eines Camerarecorders.

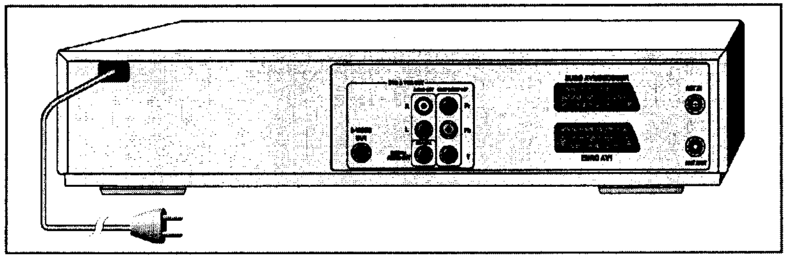
Die Anzeigen des DVD/VCR-Recorders



VCR	Tasten der Fernbedienung und am Gerät auf VCR-Betrieb geschaltet.
o-o	Videocassette eingelegt.
○	Aufnahme auf Videocassette.
◷	Timeraufnahme auf Videocassette.
SLP EP HQ	Aufnahmequalität
STEREO	Stereo-/ oder Zweikanaltonsendung.
HIFI	Aufnahme oder Wiedergabe einer HiFi-Tonsendung.
TV	Leuchtet, wenn ein Bild-/Tonsignal an Buchse EURO-AV 1 anliegt.
REPEAT ALL A-B	Wiederhol-Funktionen aktiviert
o-■	DVD/VCR-Recorder gesperrt
P.Scan	Bildausgangsignal Progressive Scan gewählt.
SVCD DVD ±RW MP3	Zeigt den verwendeten Disc-Typ an.
dts DD DIGITAL	Informieren über die Art des Audio-Signals
○	Aufnahme auf Disc.
◷	Timeraufnahme auf Disc.
DVD	Tasten der Fernbedienung und am Gerät auf Disc-Betrieb geschaltet.
0000000	Alphanumerische Anzeige für diverse Informationen, wie Titel, Kapitel, Spielzeit, Discnamen, usw.

AUF EINEN BLICK

Die Rückseite des DVD/VCR-Recorders



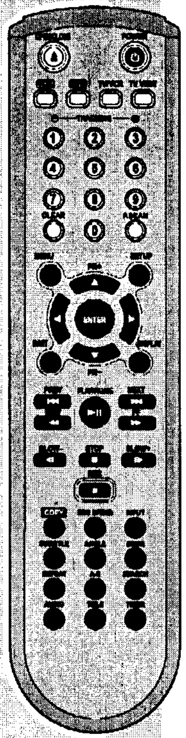
AC 200-240V~	Netzkabel.
DVD & VCR OUT	
S-VIDEO OUT	Bild-Ausgangsbuchse, zum Anschließen eines Fernsehgerätes oder AV-Receivers mit S-VIDEO-Buchse.
AUDIO OUT R L	Ton-Ausgangsbuchsen (linker/rechter Analog-Kanal) zum Anschließen einer Audio-Anlage.
DIGITAL AUDIO OUT	Ton-Ausgangsbuchse (koaxial) für PCM/Dolby Digital/DTS-Signale; zum Anschließen eines digitalen Mehrkanal-Audio-/Videoverstärkers oder AV-Receivers.
COMPONENT OUT Pr Pb Y	Bild-Ausgangsbuchse, zum Anschließen eines Fernsehgerätes, Flachbildschirmes oder Projektors (YUV-Standard).
VIDEO OUT	Bild-Ausgangsbuchse, zum Anschließen eines Fernsehgerätes oder AV-Receivers mit Cinch-Buchse.
ANT. IN	Antenneneingangsbuchse (von der Hausantenne).
ANT. OUT	Antennenausgangsbuchse (zum Fernsehgerät).
EURO AV2/DECODER	Euro/AV-Anschluss (Eingang), von einem externen Gerät.
EURO AV1	Euro/AV-Anschluss (Eingang/Ausgang), zum Fernsehgerät.

Vorsicht:
Schließen Sie keine Geräte an, wenn der DVD/VCR-Recorder eingeschaltet ist. Schalten Sie vor dem Anschließen auch die anderen Geräte aus.

Berühren Sie nicht die Innenseite der Buchsen und Stecker der Verbindungskabel. Eine elektrostatische Entladung kann den DVD/VCR-Recorder beschädigen.

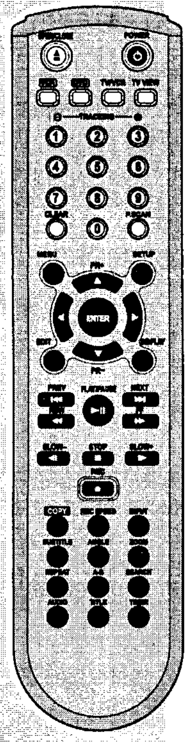
AUF EINEN BLICK

Die Fernbedienung



POWER ⏻	Schaltet den DVD/VCR-Recorder aus Stand-by ein und wieder aus. In Stand-by leuchtet die rote Anzeige am DVD/VCR-Recorder.
OPEN/CLOSE ▲	Zum Öffnen und Schließen der Disc-Schublade und zum Ausschieben der Videocassette.
VCR	Schaltet die Fernbedienung auf VCR-Betrieb.
DVD	Schaltet die Fernbedienung auf Disc-Betrieb.
TV/VCR	Schaltet vom AV-Programmplatz des Fernsehgerätes auf das Fernseh-Programm.
TV VIEW	Schaltet im MP3/JPEG-Betrieb auf das Fernsehbild.
1 ... 0	Ziffern-Tasten für verschiedene Eingaben. »0« wählt die verschiedenen AV-Programmplätze.
- TRACKING +	»1« und »3« stellen die Spurlage bei VCR-Wiedergabe ein (Tracking).
CLEAR	Setzt im VCR-Betrieb den Bandzähler auf 0 zurück; löscht einen programmierten TIMER-Platz.
P.SCAN	Schaltet den Videoausgang zwischen Interlace und Progressive um (länger 3 Sekunden drücken).
MENU	Ruft während der Wiedergabe das Discmenü einer DVD auf.
SETUP	Ruft das »Installationsmenü« des DVD/VCR-Recorders auf und schaltet es wieder ab.
▲ ▼ ◀ ▶	Wählen in den Menüs verschiedene Funktionen.
▲ PR+ ▼ PR-	Wählen Fernseh-Programme, »**PR +**« aufwärts, »**PR –**« abwärts
ENTER	Bestätigt in den Menüs angewählte Funktionen.
DISPLAY	Blendet während der Wiedergabe verschiedene Informationen (zum Beispiel Titel-/Kapitelnummer, Spielzeit) auf dem Bildschirm des Fernsehgerätes ein.
PREV ⏮ NEXT ⏭	Wählen während der Wiedergabe den vorherigen/nächsten Titel/Abschnitt.
REW ◀◀ FF ▶▶	Schalten während der Wiedergabe auf Bildsuchlauf vorwärts/rückwärts in verschiedenen Geschwindigkeiten; spulen nach Stopp das Videoband vor oder zurück.

AUF EINEN BLICK



►/❚❚	Startet die Wiedergabe. Standbild bei DVDs, Video-CDs und Videocassetten; Pause bei Audio-CDs und MP3-CDs; schaltet das Standbild schrittweise weiter.
SLOW - SLOW + ❚►	Schaltet während der Wiedergabe auf Zeitlupe* in verschiedenen Geschwindigkeiten.
STOP ■	Unterbricht jede Lauffunktion.
REC ●	Startet die Aufnahme und gibt die Ausschaltzeit (in 30 Minuten Schritten) ein.
COPY	Aktiviert die Kopier-Funktion von DVD auf VCR oder von VCR auf DVD.
REC SPEED	Wählt die Aufnahmequalität.
INPUT	Wählt Programmquellen
SUBTITLE	Zum Anwählen und Einblenden von Untertiteln* der DVD während der Wiedergabe.
ANGLE	Wählt während der Wiedergabe verschiedene Blickwinkel* (Kamera-Standorte) von bestimmten Szenen oder Passagen der DVD.
ZOOM	Vergrößert Szenen* bei der Wiedergabe.
REPEAT	Wählt verschiedene Wiederholfunktionen an.
A-B	Zum Markieren von Abschnitten bei DVDs und Video-CDs oder Titeln/Tracks bei Audio-CDs, MP3- oder Bilder-CDs für die Wiederholfunktionen.
SEARCH	Wählt die Suche nach Titel, Kapitel oder Zeit.
AUDIO	Schaltet während der Wiedergabe um zwischen Original- und Synchronsprache* einer DVD. Schaltet zwischen verschiedenen Tonformaten um.
TITLE	Ruft während der Wiedergabe das Titelmenü* der DVD auf.
TIMER	Wählt die »Timerliste«.

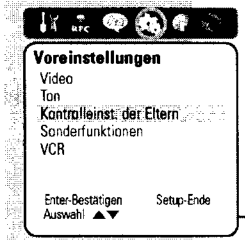
---

* abhängig von der verwendeten Disc.

KINDERSICHERUNG

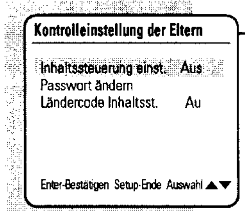
Inhalt der DVD autorisieren

DVDs können Spielfilme anbieten, deren Inhalt oder auch Szenen nicht für Kinder geeignet sind. Diese DVDs enthalten Informationen, die den Inhalt oder diese Szenen markieren. Sie sind mit Zugangslevel von 1 bis 8 versehen, die von Land zu Land unterschiedlich sein können. Sie können einen der Zugangslevel und ein bestimmtes Land wählen und damit alternative Szenen zur Wiedergabe autorisieren.



Voreinstellungen
Video
Ton
Kontrolleinst. der Eltern
Sonderfunktionen
VCR

Enter-Bestätigen Setup-Ende
Auswahl ▲▼



Kontrolleinstellung der Eltern

Inhaltssteuerung einst. Aus
Passwort ändern
Ländercode Inhaltsst. Au

Enter-Bestätigen Setup-Ende Auswahl ▲▼

Inhaltssteuerung festlegen

1 Hauptmenü mit »**SETUP**« aufrufen.

2 Menüpunkt »Voreinstellungen« mit »◄« oder »►« wählen.

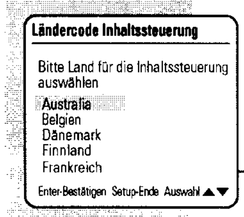
3 Zeile »Kontrolleinst. der Eltern« mit »▼« oder »▲« wählen und mit »**ENTER**« aktivieren.

4 Zeile »Inhaltssteuerung einst.« mit »▼« oder »▲« wählen und mit »**ENTER**« aktivieren.

5 Passwort (3308) mit den Ziffern-Tasten »**1...0**« eingeben und mit »**ENTER**« bestätigen.

6 Sicherungsstufe mit »▼« oder »▲« wählen und mit »**ENTER**« bestätigen.

7 Einstellung mit »**SETUP**« beenden.



Ländercode Inhaltssteuerung

Bitte Land für die Inhaltssteuerung auswählen

Australia
Belgien
Dänemark
Finnland
Frankreich

Enter-Bestätigen Setup-Ende Auswahl ▲▼

Ländercode für die Inhaltssteuerung festlegen

1 Hauptmenü mit »**SETUP**« aufrufen.

2 Menüpunkt »Voreinstellungen« mit »◄« oder »►« wählen.

3 Zeile »Kontrolleinst. der Eltern« mit »▼« oder »▲« wählen und mit »**ENTER**« aktivieren.

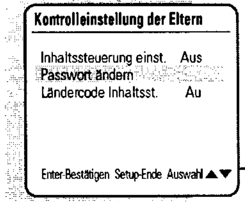
4 Zeile »Ländercode Inhaltsst.« mit »▼« oder »▲« wählen und mit »**ENTER**« aktivieren.

5 Passwort (3308) mit den Ziffern-Tasten »**1...0**« eingeben und mit »**ENTER**« bestätigen.

6 Land mit »▼« oder »▲« wählen und mit »**ENTER**« bestätigen.

7 Einstellung mit »**SETUP**« beenden.

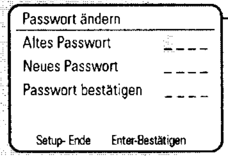
KINDERSICHERUNG



Kontrolleinstellung der Eltern

Inhaltssteuerung einst. Aus
Passwort ändern
Ländercode Inhaltsst. Au

Enter-Bestätigen Setup-Ende Auswahl ▲▼



Passwort ändern

Altes Passwort _ _ _ _
Neues Passwort _ _ _ _
Passwort bestätigen _ _ _ _

Setup- Ende Enter-Bestätigen

Zugangscode (Password) ändern

1 Hauptmenü mit »**SETUP**« aufrufen.

2 Menüpunkt »Voreinstellungen« mit »◀ « oder »▶« wählen.

3 Zeile »Kontrolleinst. der Eltern« mit »▼« oder »▲« wählen und mit »**ENTER**« aktivieren.

4 Zeile »Passwort ändern« mit »▼« oder »▲« wählen und mit »**ENTER**« aktivieren.

5 Aktuelles Passwort (3308) mit den Ziffern-Tasten »**1**...**0**« vierstellig eingeben.

6 Neues Passwort mit den Ziffern-Tasten »**1** ... **0**« vierstellig eingeben.

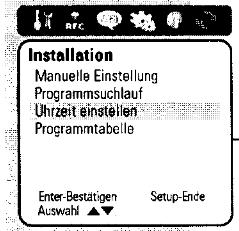
7 Gleiches Passwort mit den Ziffern-Tasten »**1**...**0**« noch einmal eingeben und mit »**ENTER**« bestätigen.

8 Einstellung mit »**SETUP**« beenden.

Hinweis: Die Tastenfolge "3 3 0 8" hebt den persönlichen PIN-Code auf.

SONDEREINSTELLUNGEN

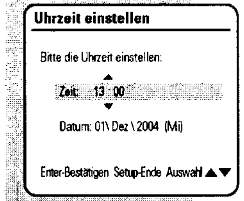
Uhrzeit und Datum einstellen



Installation

Manuelle Einstellung
Programmsuchlauf
Uhrzeit einstellen
Programmtabelle

Enter-Bestätigen Setup-Ende
Auswahl ▲▼



Uhrzeit einstellen

Bitte die Uhrzeit einstellen:

Zeit: 13 : 00

Datum: 01\ Dez \ 2004 (Mi)

Enter-Bestätigen Setup-Ende Auswahl ▲▼

Sollte Uhrzeit und Datum nicht von einem Fernseh-Programm übernommen worden sein, können Sie dies manuell einstellen.

1 Hauptmenü mit »**SETUP**« aufrufen.

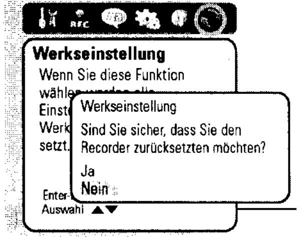
2 Menüpunkt »Installation« mit »◀ « oder »▶« wählen

3 Zeile »Uhrzeit einstellen« mit »▼« oder »▲« wählen.
Stunden mit »▼« oder »▲« eingeben.
Mit »▶« zur Minutenstelle wechseln und Minuten mit »▼« oder »▲« eingeben.
Eingaben mit »◀ « bestätigen, die Eingabemarke springt zum »Datum«.

4 Jahr mit »▼« oder »▲« eingeben.
Mit »◀ « zum Monat wechseln und Monat mit »▼« oder »▲« eingeben.
Mit »◀ « zum Tag wechseln und Tag mit »▼« oder »▲« eingeben.
Eingaben mit »**ENTER**« bestätigen.

5 Einstellung mit »**SETUP**« beenden.

DVD/VCR-Recorder in den Auslieferzustand schalten



Werkseinstellung

Wenn Sie diese Funktion wähle[n] … Einst… Werk… setzt.

Werkseinstellung

Sind Sie sicher, dass Sie den Recorder zurücksetzten möchten?

Ja
Nein

Enter-…
Auswahl ▲▼

Alle persönlichen Kundeneinstellungen werden in den Auslieferzustand zurück gesetzt.
Sie müssen alle Einstellungen des Kapitels „Inbetriebnahme" durchführen.

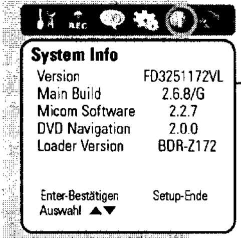
1 Hauptmenü mit »**SETUP**« aufrufen.

2 Menüpunkt »Werkseinstellungen« mit »◀ « oder »▶« wählen und mit »**ENTER**« aktivieren.

3 Zeile »Ja« mit »▼« oder »▲« wählen und Löschvorgang mit »**ENTER**« bestätigen.

4 Einstellung mit »**SETUP**« beenden.

Systeminformationen aufrufen



System Info

Version	FD3251172VL
Main Build	2.6.8/G
Micom Software	2.2.7
DVD Navigation	2.0.0
Loader Version	BDR-Z172

Enter-Bestätigen Setup-Ende
Auswahl ▲▼

1 Hauptmenü mit »**SETUP**« aufrufen.

2 Menüpunkt »System Info« mit »◀ « oder »▶« wählen und mit »**ENTER**« aktivieren.

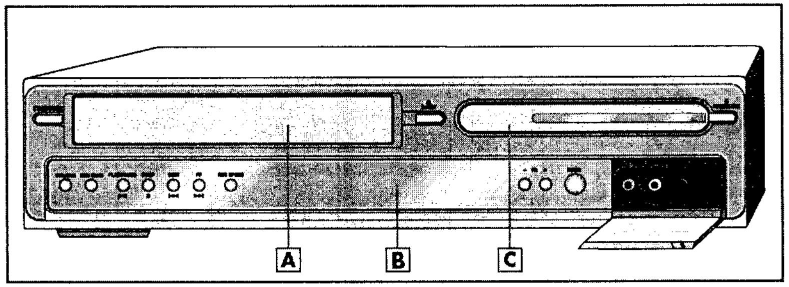
3 Einstellung mit »**SETUP**« beenden.

Operating Hints

This chapter contains excerpts from the operating instructions.
For further particulars please refer to the appropriate user instructions the part number of which is indicated in the relevant spare parts list.

OVERVIEW

The front of the DVD/VCR recorder

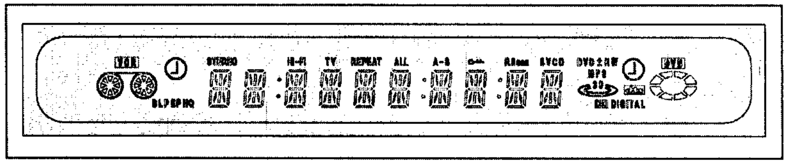


STANDBY/ON	Switches the DVD/VCR recorder on from stand-by mode and off again.
🄰	Cassette compartment.
🄱	Display.
⏏ EJECT	Ejects a video cassette.
🄲	Compartment for CD media.
⏏ OPEN/CLOSE	Opens and closes the disc compartment.
VCR/DVD	Switches the buttons on the device between VCR operation and DVD operation.
DISC MENU	Opens the disc menu of a DVD during playback.
PLAY/PAUSE **▶❚❚**	Begins the playback of the CD or video cassette. During playback, freeze frame and frame-by-frame playback for DVD+RW/DVD+Rs, DVDs, video CDs and video cassettes. Pause for MP3 CDs, JPEG CDs, KODAK Picture CDs and audio CDs. During recording, recording pause for discs and video cassettes.
STOP ■	Ends playback and recording.
REW FF **I◀◀ ▶▶I**	Selects the previous/next title or section of the disc during playback. Selects picture search during playback of a video cassette. Rewinds or fast forwards the video cassette when the device is stopped.
REC SPEED	Selects recording speed.
- PR +	Select television stations and station sources, »-« up »+« down.

OVERVIEW

● REC	Starts recording on the disc or video tape and for entering the switch-off time (in 15 minute intervals in disc mode or 30 minute intervals in VCR mode).
AV.F VIDEO **L AUDIO R**	Video/audio input sockets for connecting to a camcorder.

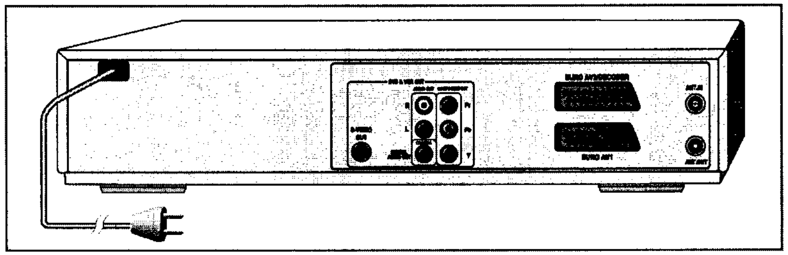
The displays on the DVD/VCR recorder



VCR	The buttons on the device and the remote control are switched to VCR operation.
σ-σ	Video cassette inserted.
○	Recording on video cassette.
◷	Timer recording on video cassette.
SLP EP HQ	Recording quality
STEREO	Stereo or two-channel sound transmission.
HIFI	Recording or playback of a HiFi audio broadcast.
TV	Glows when a video/audio signal is present at the EURO-AV 1 socket.
REPEAT ALL A-B	Repeat functions activated
o–▪	DVD/VCR recorder function blocked
P.Scan	Progressive Scan video output signal selected.
SVCD DVD **±RW MP3**	Displays the selected disc type.
dts **DD DIGITAL**	Information on the type of audio signal
○	Recording on disc.
◷	Timer recording on disc.
DVD	The buttons on the device and the remote control are switched to disc operation.
0000000	Alphanumerical display for various information such as the title, chapter, playing time and disc name.

OVERVIEW

The back of the DVD/VCR recorder

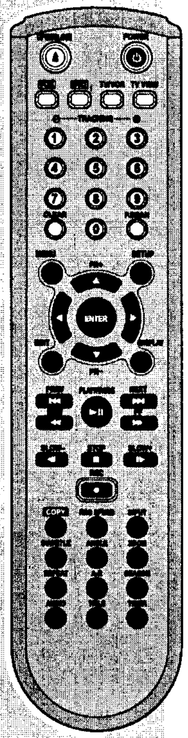


AC 200-240V~	Mains cable.
DVD & VCR OUT	
S-VIDEO OUT	Video output socket for connecting a television or AV receiver with an S-VIDEO socket.
AUDIO OUT R L	Audio output sockets (left/right analogue channel) for connecting an audio system.
DIGITAL AUDIO OUT	Sound output socket (coaxial) for PCM/Dolby digital/DTS signals, For connecting a multi-channel digital audio/video amplifier or AV receiver.
COMPONENT OUT Pr Pb Y	Video output socket for connecting a television, flat screen or projector (YUV standard).
VIDEO OUT	Video output socket for connecting a television or AV receiver with a cinch socket.
ANT. IN	Antenna input socket (for the rooftop antenna).
ANT. OUT	Antenna output jack (to the television).
EURO AV2/DECODER	Euro/AV (Scart) socket (input) for an external device.
EURO AV1	Euro-AV (Scart) socket (input/output) for the television.

Caution:

Do not connect any devices while the DVD/VCR recorder is switched on. Switch off the other devices as well before connecting them.

Never touch the inside of the sockets and plugs of the connecting cables. Electrostatic discharge can damage the DVD/VCR recorder.

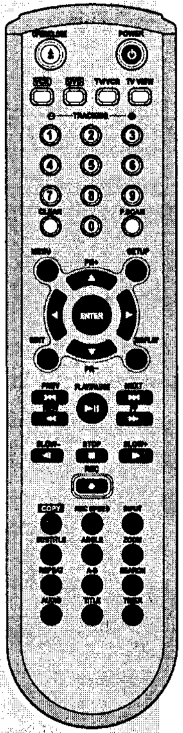


OVERVIEW

The remote control

POWER ⏻	Switches the DVD/VCR recorder on from stand-by mode and off again. The red indicator on the DVD/VCR recorder lights up in stand-by mode.
OPEN/CLOSE ▲	Opens and closes the disc compartment and ejects a video cassette.
VCR	Switches the remote control to VCR mode.
DVD	Switches the remote control to disc mode.
TV/VCR	Switches from AV channel of the television to the television station.
TV VIEW	In MP3/JPEG mode, switches to the television picture.
1 ... 0	Number buttons for various entries. **»0«** Selects the various AV channels.
- TRACKING +	**»1«** and **»3«** set the track position for VCR playback (tracking).
CLEAR	Resets the cassette counter to 0 in VCR mode. Deletes a programmed timer position.
P.SCAN	Switches the video output between interlace and progressive (press for longer than 3 seconds).
MENU	Opens the disc menu of a DVD during playback.
SETUP	Opens and closes the installation menu of the DVD/VCR recorder.
▲ ▼ ◀ ▶	Select various functions in the menus.
▲ PR+ ▼ PR-	Select television stations, **»PR +«** up, **»PR –«** down
ENTER	Confirms selected functions in the menus.
DISPLAY	Displays various information on the television screen during playback, such as the title or chapter number and playing time.
PREV ⏮ **NEXT ⏭**	Selects the previous/next title or section title/section.
REW ◀◀ **FF ▶▶**	Switch to forwards/backwards frame search at various speeds during playback. Rewinds or fast forwards the video cassette when the device is stopped.

OVERVIEW



▶/II	Starts playback. Freeze frame for DVDs, video CDs and video cassettes. Pause for audio CDs and MP3 CDs. Switches the freeze frame forwards step-by-step.
SLOW - SLOW + I▶	Switches to slow motion during playback* in various speeds.
STOP ■	Interrupts all drive functions.
REC ●	Starts the recording and enters the switch-off time (in 30 minute steps).
COPY	Activates the copying function from DVD to VCR or from VCR to DVD.
REC SPEED	Selects the recording quality.
INPUT	Selects input sources.
SUBTITLE	For selecting and displaying subtitles* of the DVD during playback.
ANGLE	Selects various camera angles* for certain scenes or passages on the DVD during playback.
ZOOM	Zooms in on scenes* during playback.
REPEAT	Selects various repeat functions.
A-B	For marking sections from DVDs and video CDs and titles or tracks on audio CDs, MP3 CDs or picture CDs for the repeat function.
SEARCH	Selects a search by title, chapter or time.
AUDIO	Switches between the original and the dubbed language* during DVD playback. Switches between the various sound formats.
TITLE	Calls up the DVD title menu* during playback.
TIMER	Selects the timer list.

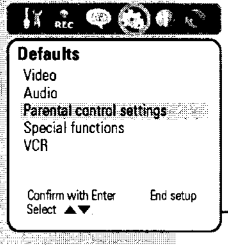
---

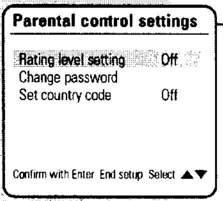
* Depends on the disc in use.

CHILD LOCK

Authorising the contents of a DVD

Films on DVD may be wholly or partially unsuitable for children. These DVDs contain information which marks the content or scenes. They are assigned access levels 1 to 8, which may differ from country to country. You can select one of the access levels and a certain country, and thus authorise alternative scenes for playback.





Rating level setting Off
Change password
Set country code Off

Setting rating level

1 Press »SETUP« to open the main menu.

2 Select »Defaults« with »◀ « or »▶«.

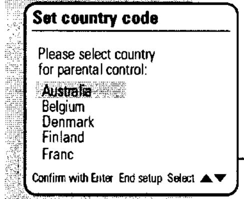
3 Select »Parental control settings« with »▼« or »▲« and confirm with »ENTER«.

4 Select »Rating level setting« with »▼« or »▲« and confirm with »ENTER«.

5 Enter the password (3308) with the number buttons »1...0« and confirm with »ENTER«.

6 Press »▼« or »▲« to select the rating level and »ENTER« to confirm.

7 Press »SETUP« to finish the setting.



Please select country for parental control:
Australia
Belgium
Denmark
Finland
Franc

Selecting the country code for rating level control

1 Press »SETUP« to open the main menu.

2 Select »Defaults« with »◀ « or »▶«.

3 Select »Parental control settings« with »▼« or »▲« and confirm with »ENTER«.

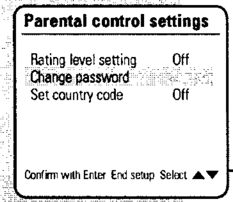
4 Select »Set country code« with »▼« or »▲« and confirm with »ENTER«.

5 Enter the password (3308) with the number buttons »1...0« and confirm with »ENTER«.

6 Press »▼« or »▲« to select the country and press »ENTER« to confirm.

7 Press »SETUP« to finish the setting.

CHILD LOCK

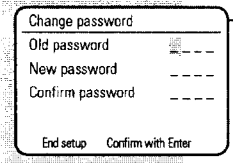

Parental control settings

Rating level setting Off

Change password

Set country code Off

Confirm with Enter
End setup
Select ▲▼


Change password

Old password ----

New password ----

Confirm password ----

End setup
Confirm with Enter

Changing the access code (password)

1 Press »**SETUP**« to open the main menu.

2 Select »Defaults« with »◀ « or »▶«.

3 Select »Parental control settings« with » ▼« or » ▲« and confirm with »**ENTER**«.

4 Select »Change password« with »▼« or »▲« and press »**ENTER**« to confirm.

5 Enter the current password with (3308) with the number buttons »**1**...**0**«. This is a four-digit entry.

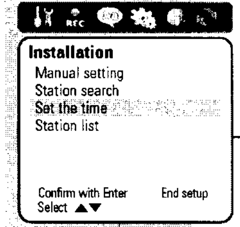
6 Enter the new password with the number buttons »**1** ... **0**«. This is a four-digit entery.

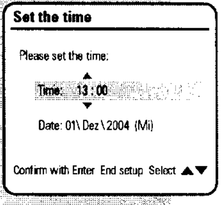
7 Enter the same password using the number buttons »**1**...**0**« and press »**ENTER**« to confirm.

8 Press »**SETUP**« to finish the setting.

Note: Enter the key sequence "3 3 0 8" to cancel your PIN code number.

SPECIAL SETTINGS


REC
Installation
Manual setting
Station search
Set the time
Station list
Confirm with Enter
End setup
Select ▲▼


Set the time

Please set the time:

Time: 13 : 00

Date: 01\ Dez \ 2004 (Mi)

Confirm with Enter
End setup
Select ▲▼

Setting the time and date

If you do not want to use the date and time broadcast by a television station, you can set it manually.

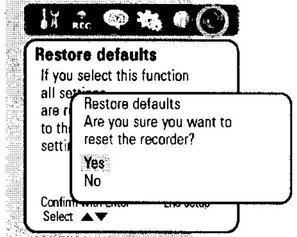
1 Press »**SETUP**« to open the main menu.

2 Select the »Installation« menu item with »◀ « or »▶«.

3 Select »Set the time« with »▼« or »▲«.
Enter the hours with »▼« or »▲«.
Switch to minutes entry with »▶« and enter the minutes with »▼« or »▲«.
Confirm your entry with »◀ «, the input cursor moves to »Date«.

4 Enter the year with »▼« or »▲«.
Switch to months entry with »◀ « and enter the month with »▼« or »▲«.
Switch to day entry with »◀ « and enter the day with »▼« or »▲«.
Press »**ENTER**« to confirm your entry.

5 Press »**SETUP**« to finish the setting.


Restore defaults

If you select this function all se are r to th setti

Restore defaults

Are you sure you want to reset the recorder?

Yes

No

REC
Confirm
Select ▲▼

Resetting the DVD/VCR recorder to its original condition

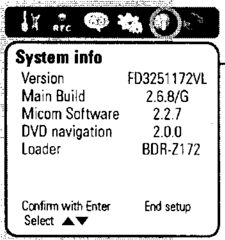
All custom settings are restored to the original status.
You must perform all settings as described in the "Initial installation" chapter.

1 Press »**SETUP**« to open the main menu.

2 Select »Restore defaults« with »◀ « or »▶« and press »**ENTER**« to confirm.

3 Select »Yes« with »▼« or »▲« and press »**ENTER**« to confirm the deletion.

4 Press »**SETUP**« to finish the setting.


System info

Version FD3251172VL

Main Build 2.6.8/G

Micom Software 2.2.7

DVD navigation 2.0.0

Loader BDR-Z172

REC
Confirm with Enter
End setup
Select ▲▼

Calling up system information

1 Press »**SETUP**« to open the main menu.

2 Select »System info« with »◀ « or »▶« and press »**ENTER**« to confirm.

3 Press »**SETUP**« to finish the setting.

System-Informationen

Zur Anzeige der System-Informationen sind folgende Bedienschritte mit der Fernbedienung auszuführen:
- Recorder einschalten.
- SETUP drücken.
- Menüpunkt "System Info" mit ◀ oder ▶ anwählen und mit ENTER aktivieren. Auf dem Bildschirm des Fernsehgerätes werden die System-Informationen angezeigt:

Version	FD3251172VL
Main Build	2.6.8/G
Micom Software	2.2.7
DVD Navigation	2.0.0
Loader	BDR-Z172

Software-Upgrade

- Neue Software auf eine CD brennen.
- CD im DVD-Recorder einlegen und Hinweise Bildschirm des Fernsehgerätes beachten.
  Achtung: Während des Updates keine Tasten drücken oder die Spannungsversorgung unterbrechen, da sonst das Flash auf der DVD-Platte zerstört werden kann.

Gewährleistung
Wir weisen ausdrücklich darauf hin, dass nur von GRUNDIG freigegebene System-Software zulässig ist. Wurde als Fehlerursache festgestellt, dass eine aus nicht legitimierten Quellen gleich welcher Herkunft stammende oder eine veränderte System-Software in die Geräte geladen wurde, so ist dies ein Fremdeingriff. Ein Fremdeingriff führt zum Erlöschen jeglicher Gewährleistungsansprüche. GRUNDIG muss daher alle aus diesen Gründen resultierenden Kostenerstattungen generell ablehnen. Instandsetzungskosten, auch innerhalb der Gewährleistungszeit, gehen in diesen Fällen zu Lasten des Händlers bzw. des Endkunden.

System Informations

The system informations are shown via the following steps with remote control:
- Switch on the recorder.
- Press SETUP.
- Select "System Info" with ◀ or ▶ and press ENTER to confirm. At the screen of the TV are shown the Version Numbers:

Version	FD3251172VL
Main Build	2.6.8/G
Micom Software	2.2.7
DVD Navigation	2.0.0
Loader	BDR-Z172

Software Upgrade

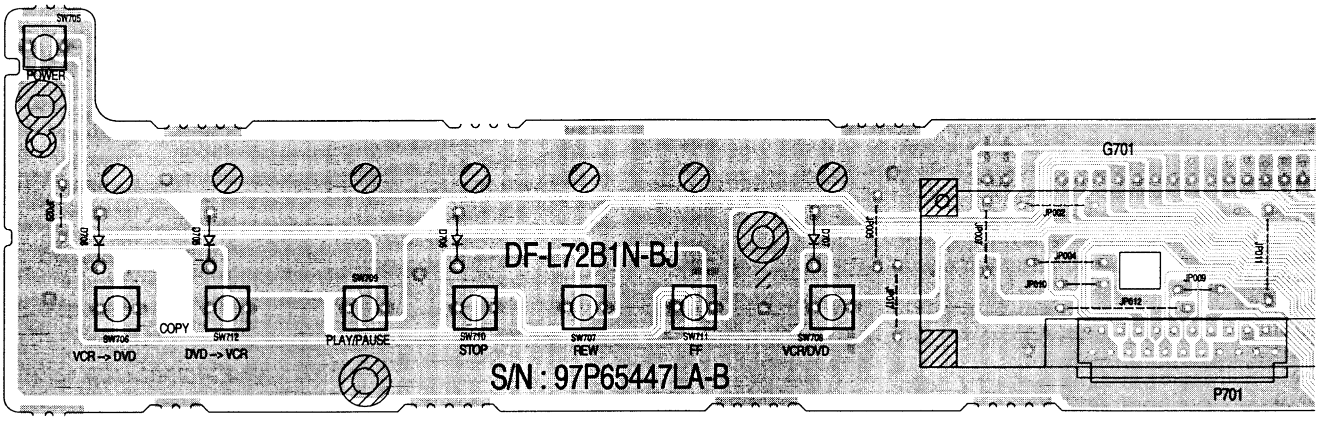
- Burn the new software on a CD.
- Insert the upgrade CD and observe the hints on the screen of the TV set.
  Attention: Don't press any keys and without power interruption while software upgrading, otherwise, the flash of the DVD board may be destroyed.

Warranty / costs
We expressly point out that only operating software authorized by GRUNDIG is allowed. If a failure is caused by an operating software which has been downloaded from not authorized sources, independent of its origin, or by a modified software, this represents an outside interference. An outside interference leads to the expiration of any warranty claims. For this reason, GRUNDIG is obliged to generally refuse any payment due to such infringements. In such cases, the repair costs are at the charge of the retailer or the final customer, even within the period of warranty.

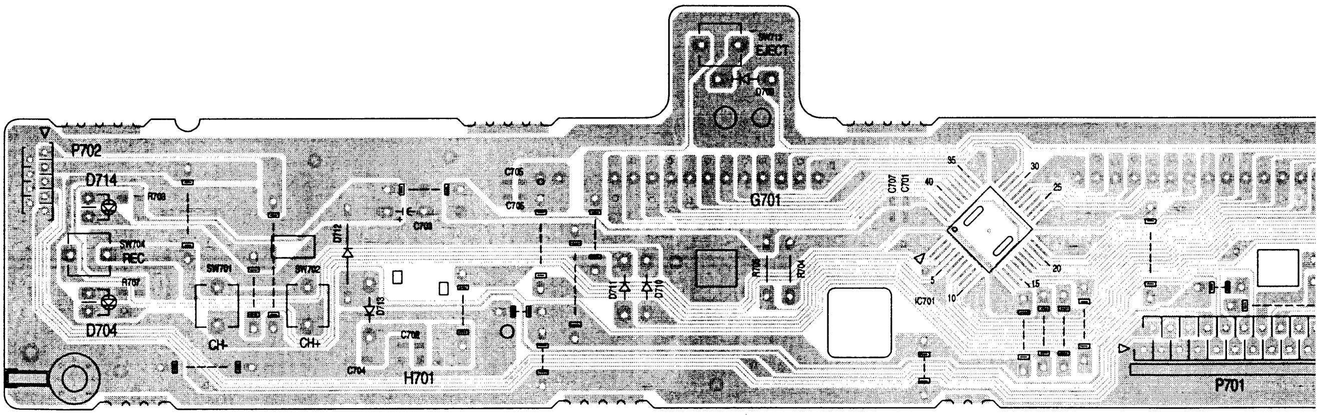
Platinenabbildungen und Schaltpläne / Layout of PCBs and Circuit Diagrams

Bedieneinheiten / Keyboard Control Units

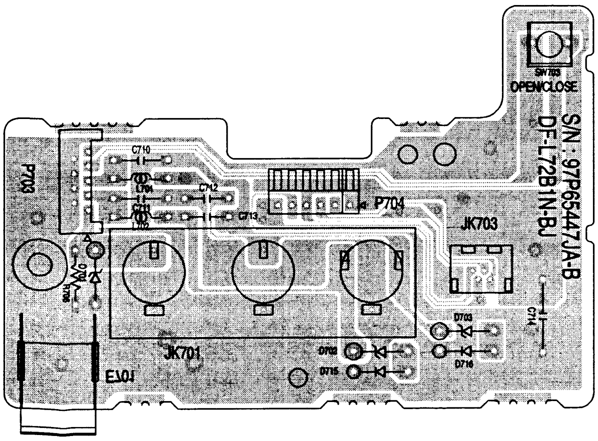
Ansicht von der Bestückungsseite / View of Component Side


SW705
POWER
G701
DF-L72B1N-BJ
SW706
VCR -> DVD
COPY
SW712
DVD -> VCR
SW709
PLAY/PAUSE
SW710
STOP
SW707
REW
SW711
FF
SW708
VCR/DVD
S/N : 97P65447LA-B
P701

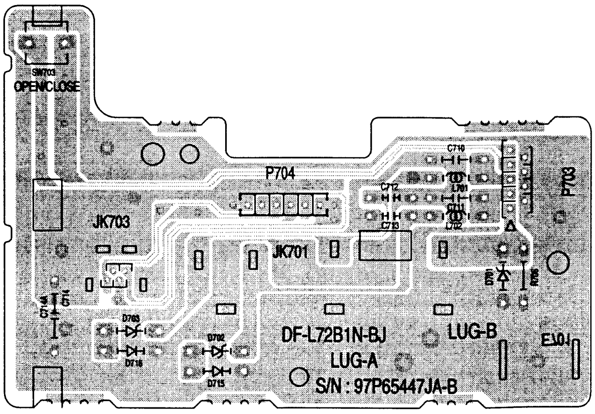
Ansicht von der Lötseite / View of Soler Side

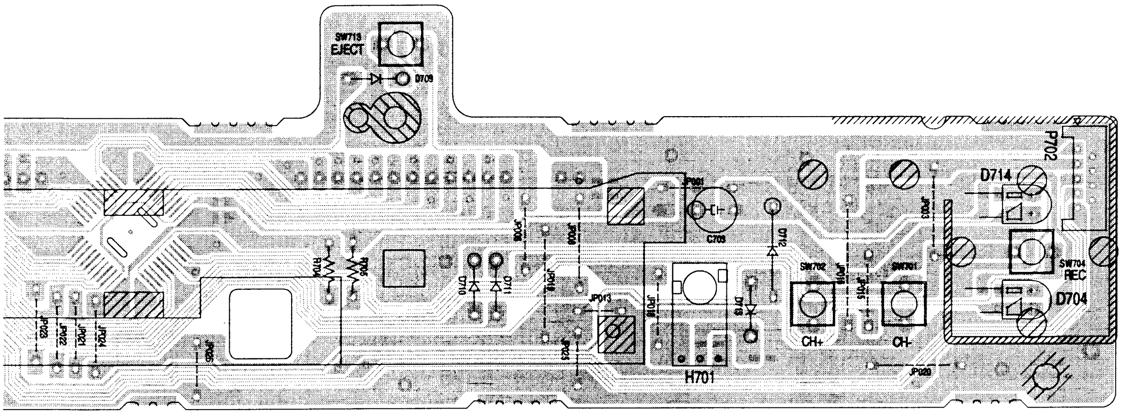

SW713
EJECT
P702
D714
SW704
REC
D704
SW701
SW702
CH-
CH+
H701
G701
IC701
P701

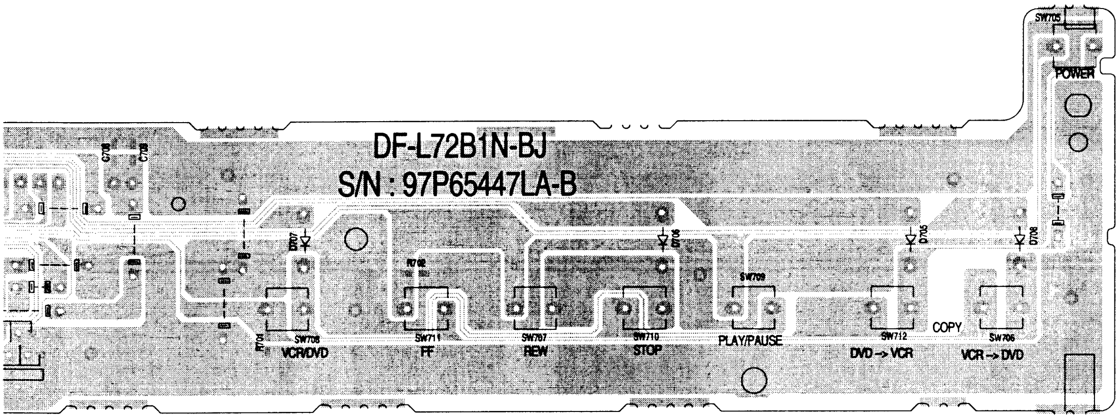
Ansicht von der Bestückungsseite / View of Component Side


SW703
OPEN/CLOSE
S/N : 97P65447JA-B
DF-L72B1N-BJ
P703
C710
C712
C713
P704
JK703
JK701
C714
D703
D716
D702
D715
E101

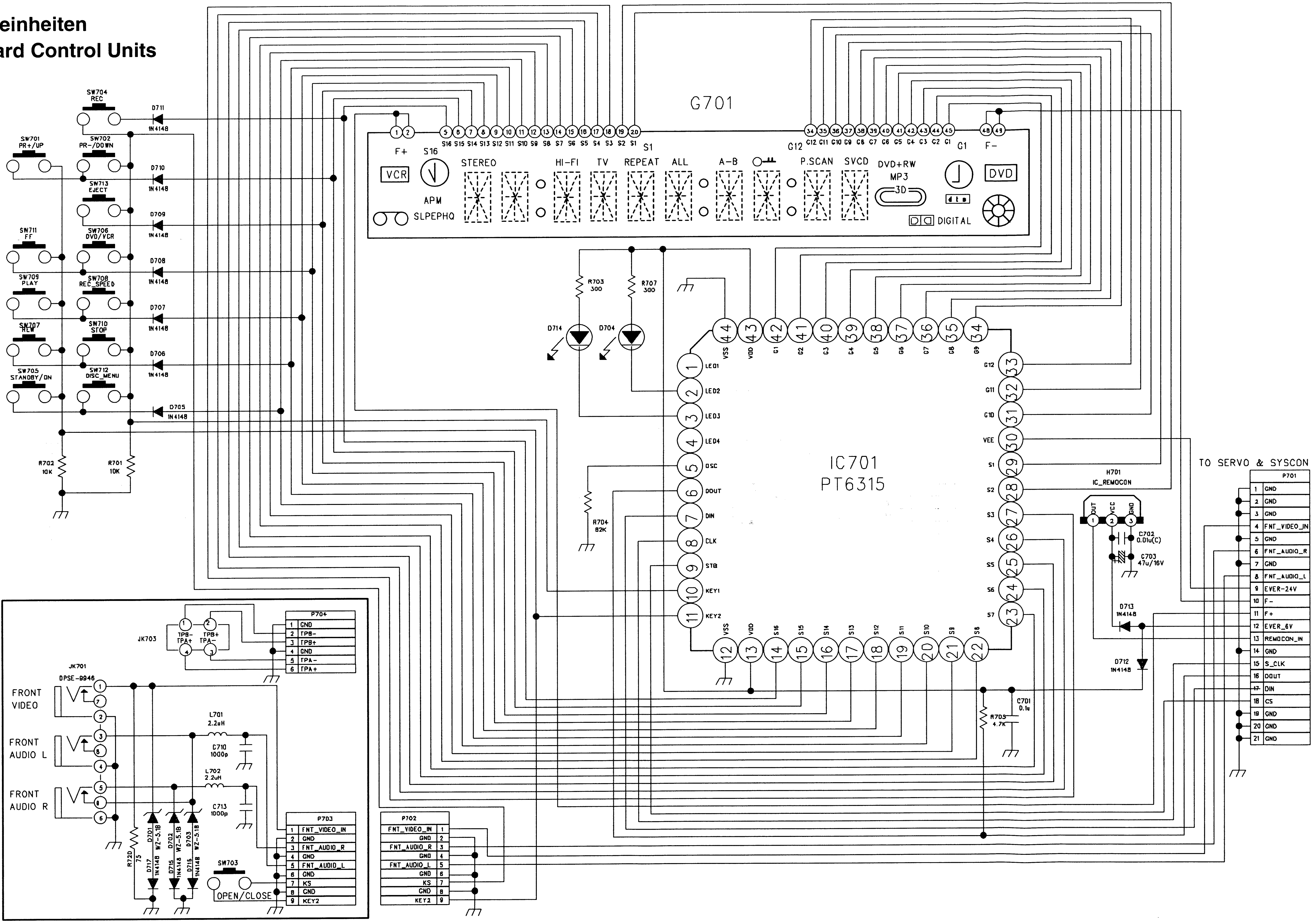
Ansicht von der Lötseite / View of Soler Side


SW703
OPEN/CLOSE
P704
C710
P703
JK703
JK701
D703
D716
D702
D715
DF-L72B1N-BJ
LUG-B
LUG-A
S/N : 97P65447JA-B
E101


SW713
EJECT
D709
P702
D714
JP001
C703
D712
JP003
SW702
SW701
SW704
REC
D704
R704
R705
D710
D711
JP013
H701
CH+
CH-
JP020
JP023
JP022
JP021
JP024

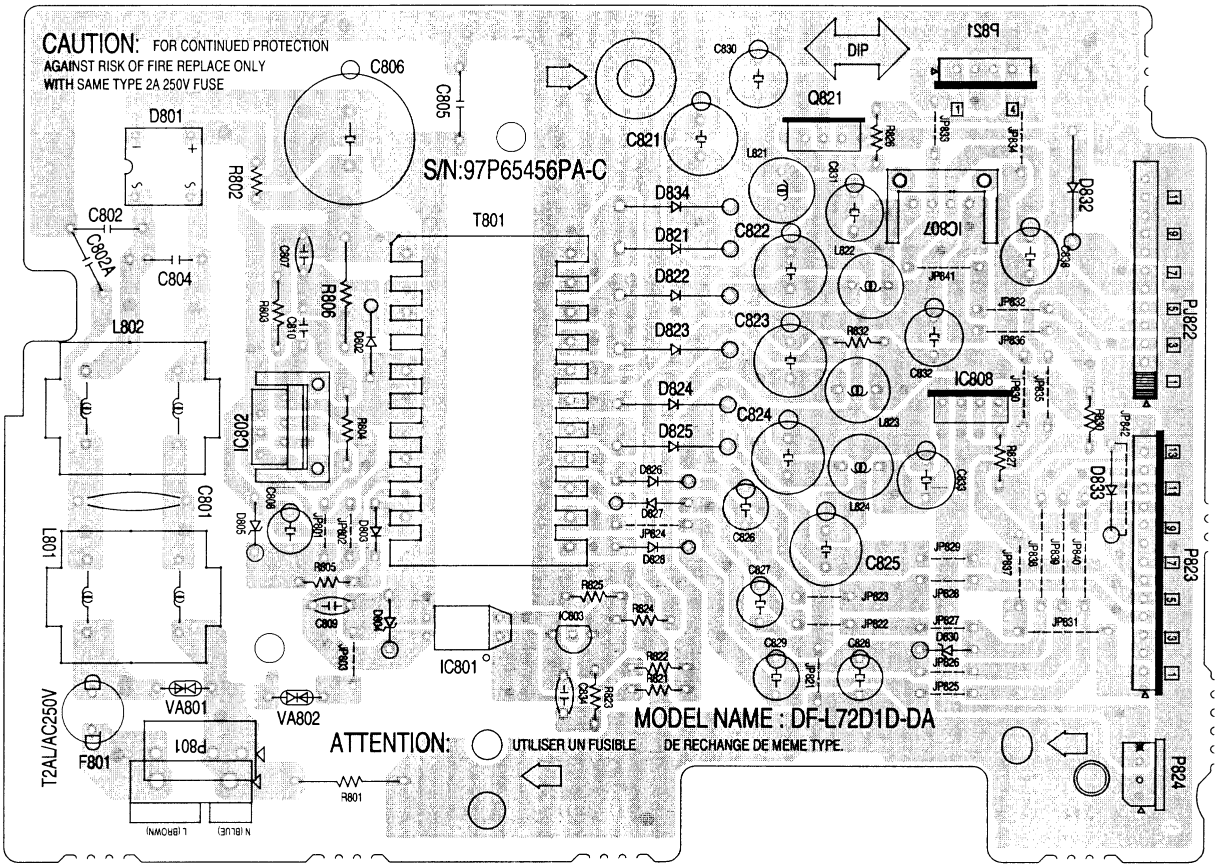

SW705
POWER
DF-L72B1N-BJ
S/N : 97P65447LA-B
D707
R702
D706
D705
D708
SW709
R701
SW708
VCR/DVD
SW711
FF
SW707
REW
SW710
STOP
PLAY/PAUSE
SW712
DVD -> VCR
COPY
SW706
VCR -> DVD

Bedieneinheiten
Keyboard Control Units

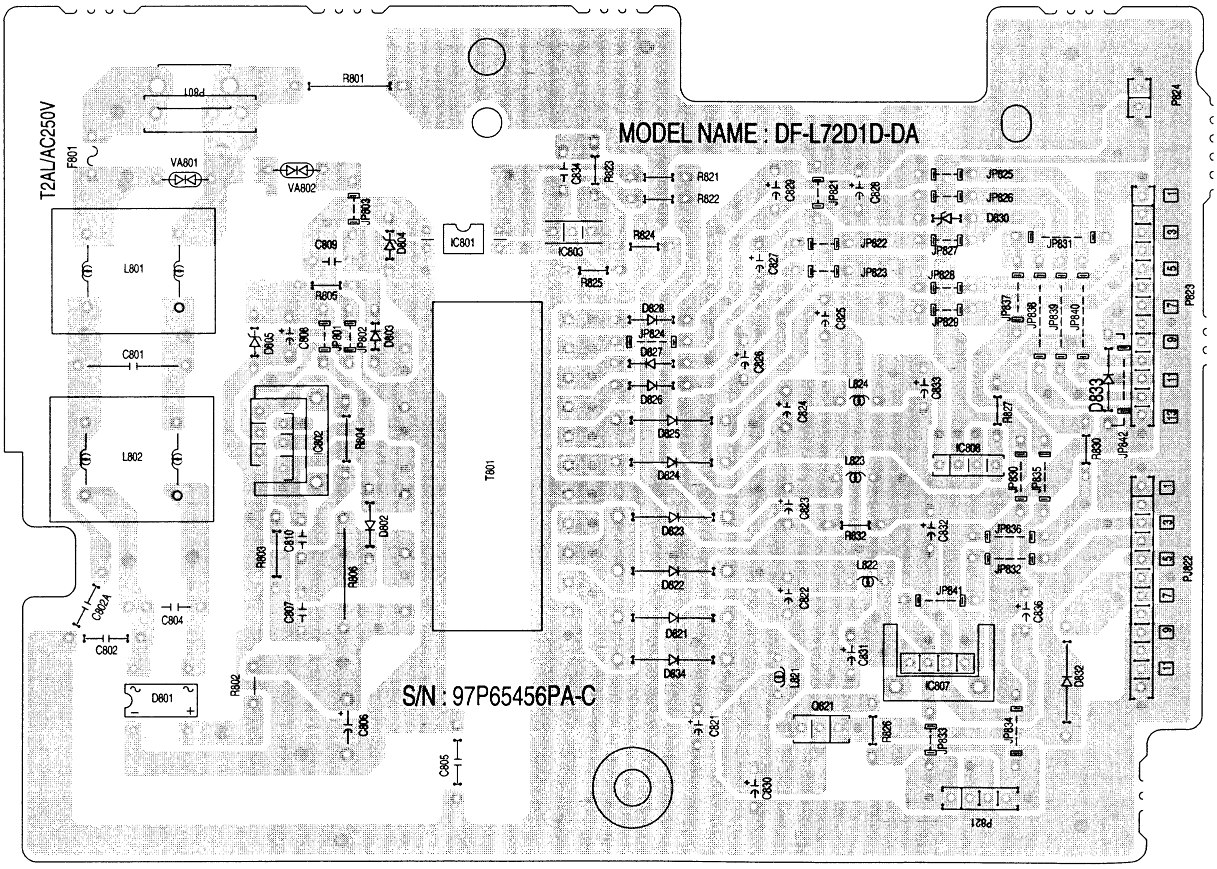

SW704 REC
SW701 PR+/UP
SW702 PR-/DOWN
SW713 EJECT
SW711 FF
SW706 DVD/VCR
SW709 PLAY
SW708 REC_SPEED
SW707 REW
SW710 STOP
SW705 STANDBY/ON
SW712 DISC_MENU
D711 1N4148
D710 1N4148
D709 1N4148
D708 1N4148
D707 1N4148
D706 1N4148
D705 1N4148
R702 10K
R701 10K
G701
F+
S16
S16 S15 S14 S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1
S1
G12
C12 C11 C10 C9 C8 C7 C6 C5 C4 C3 C2 C1
G1
F-
VCR
STEREO
HI-FI
TV
REPEAT
ALL
A-B
P.SCAN
SVCD
DVD+RW
MP3
3D
DVD
APM
SLPEPHQ
DIGITAL
R703 300
R707 300
D714
D704
R704 82K
IC701
PT6315
LED1
LED2
LED3
LED4
OSC
DOUT
DIN
CLK
STB
KEY1
KEY2
VSS
VDD
G1 G2 G3 G4 G5 G6 G7 G8 G9
G12
G11
G10
VEE
S1
S2
S3
S4
S5
S6
S7
S16 S15 S14 S13 S12 S11 S10 S9 S8
R705 4.7K
C701 0.1u
H701 IC_REMOCON
OUT VCC GND
C702 0.01u(C)
C703 47u/16V
D713 1N4148
D712 1N4148
TO SERVO & SYSCON
P701
1 GND
2 GND
3 GND
4 FNT_VIDEO_IN
5 GND
6 FNT_AUDIO_R
7 GND
8 FNT_AUDIO_L
9 EVER-24V
10 F-
11 F+
12 EVER_6V
13 REMOCON_IN
14 GND
15 S_CLK
16 DOUT
17 DIN
18 CS
19 GND
20 GND
21 GND
JK703
TPB- TPA+
TPB+ TPA-
P704
1 GND
2 TPB-
3 TPB+
4 GND
5 TPA-
6 TPA+
JK701
DPSE-9946
FRONT VIDEO
FRONT AUDIO L
FRONT AUDIO R
L701 2.2uH
C710 1000p
L702 2.2uH
C713 1000p
R720 75
D701 WZ-5.1B
D702 WZ-5.1B
D703 WZ-5.1B
D717 1N4148
D715 1N4148
D716 1N4148
SW703
OPEN/CLOSE
P703
1 FNT_VIDEO_IN
2 GND
3 FNT_AUDIO_R
4 GND
5 FNT_AUDIO_L
6 GND
7 KS
8 GND
9 KEY2
P702
FNT_VIDEO_IN 1
GND 2
FNT_AUDIO_R 3
GND 4
FNT_AUDIO_L 5
GND 6
KS 7
GND 8
KEY2 9

Netzteilplatte / Power Supply Board

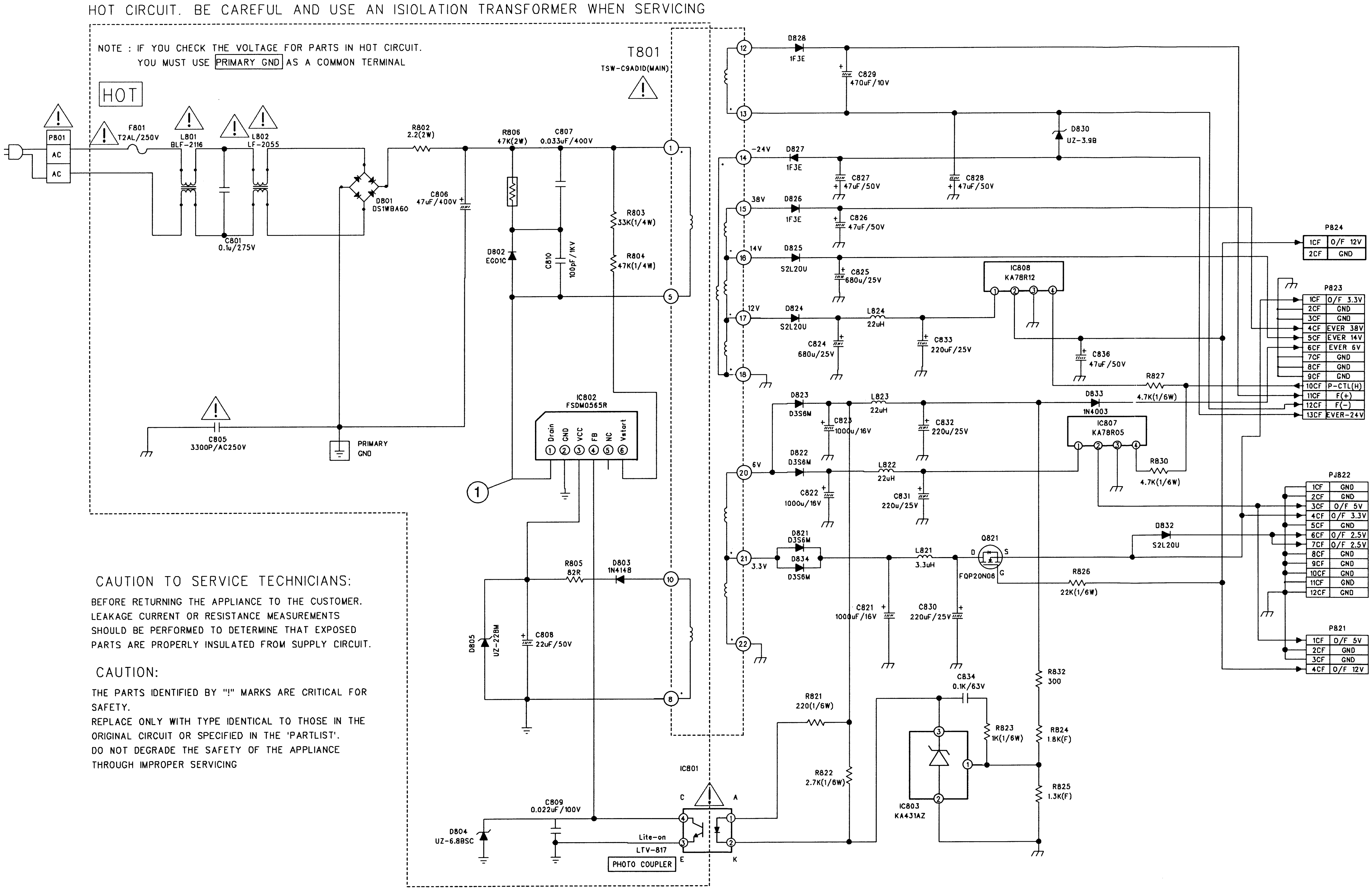
Ansicht von der Bestückungsseite / View of Component Side


CAUTION: FOR CONTINUED PROTECTION
AGAINST RISK OF FIRE REPLACE ONLY
WITH SAME TYPE 2A 250V FUSE
S/N:97P65456PA-C
MODEL NAME : DF-L72D1D-DA
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE.
T2AL/AC250V
DIP
D801
C802
C802A
C804
C806
C805
R802
L802
C801
L801
F801
VA801
VA802
P801
R801
T801
IC802
IC801
IC803
IC807
IC808
Q821
C821
C822
C823
C824
C825
C830
D821
D822
D823
D824
D825
D834
D832
D833
P821
PJ822
P823
P824
N (BLUE)
L (BROWN)

Ansicht von der Lötseite / View of Soler Side


T2AL/AC250V
MODEL NAME : DF-L72D1D-DA
S/N : 97P65456PA-C
R801
P801
F801
VA801
VA802
L801
C801
L802
C802A
C804
C802
D801
R802
C806
C805
IC801
IC802
IC803
IC807
IC808
T801
Q821
C821
C830
P821
PJ822
P823
P824
D832
D833

Netzteilplatte / Power Supply Board


HOT CIRCUIT. BE CAREFUL AND USE AN ISIOLATION TRANSFORMER WHEN SERVICING
NOTE : IF YOU CHECK THE VOLTAGE FOR PARTS IN HOT CIRCUIT.
YOU MUST USE PRIMARY GND AS A COMMON TERMINAL
HOT
P801
AC
AC
F801
T2AL/250V
L801
BLF-2116
L802
LF-2055
C801
0.1u/275V
D801
DS1WBA60
R802
2.2(2W)
C806
47uF/400V
R806
47K(2W)
C807
0.033uF/400V
D802
EG01C
C810
100pF/1KV
R803
33K(1/4W)
R804
47K(1/4W)
T801
TSW-C9AD1D(MAIN)
C805
3300P/AC250V
PRIMARY
GND
IC802
FSDM0565R
Drain
GND
VCC
FB
NC
Vstart
①
R805
82R
D803
1N4148
D805
UZ-22BM
C808
22uF/50V
C809
0.022uF/100V
D804
UZ-6.8BSC
IC801
Lite-on
LTV-817
PHOTO COUPLER
C
A
E
K
D828
1F3E
C829
470uF/10V
D830
UZ-3.9B
-24V
D827
1F3E
C827
47uF/50V
C828
47uF/50V
38V
D826
1F3E
C826
47uF/50V
14V
D825
S2L20U
C825
680u/25V
IC808
KA78R12
12V
D824
S2L20U
L824
22uH
C824
680u/25V
C833
220uF/25V
C836
47uF/50V
R827
4.7K(1/6W)
D823
D3S6M
C823
1000u/16V
L823
22uH
C832
220u/25V
D833
1N4003
IC807
KA78R05
R830
4.7K(1/6W)
6V
D822
D3S6M
C822
1000u/16V
L822
22uH
C831
220u/25V
D821
D3S6M
D834
D3S6M
3.3V
L821
3.3uH
Q821
FQP20N06
D
S
G
D832
S2L20U
R826
22K(1/6W)
C821
1000uF/16V
C830
220uF/25V
C834
0.1K/63V
R821
220(1/6W)
R822
2.7K(1/6W)
R823
1K(1/6W)
IC803
KA431AZ
R832
300
R824
1.8K(F)
R825
1.3K(F)
P824
1CF O/F 12V
2CF GND
P823
1CF O/F 3.3V
2CF GND
3CF GND
4CF EVER 38V
5CF EVER 14V
6CF EVER 6V
7CF GND
8CF GND
9CF GND
10CF P-CTL(H)
11CF F(+)
12CF F(-)
13CF EVER-24V
PJ822
1CF GND
2CF GND
3CF O/F 5V
4CF O/F 3.3V
5CF GND
6CF O/F 2.5V
7CF O/F 2.5V
8CF GND
9CF GND
10CF GND
11CF GND
12CF GND
P821
1CF O/F 5V
2CF GND
3CF GND
4CF O/F 12V

CAUTION TO SERVICE TECHNICIANS:

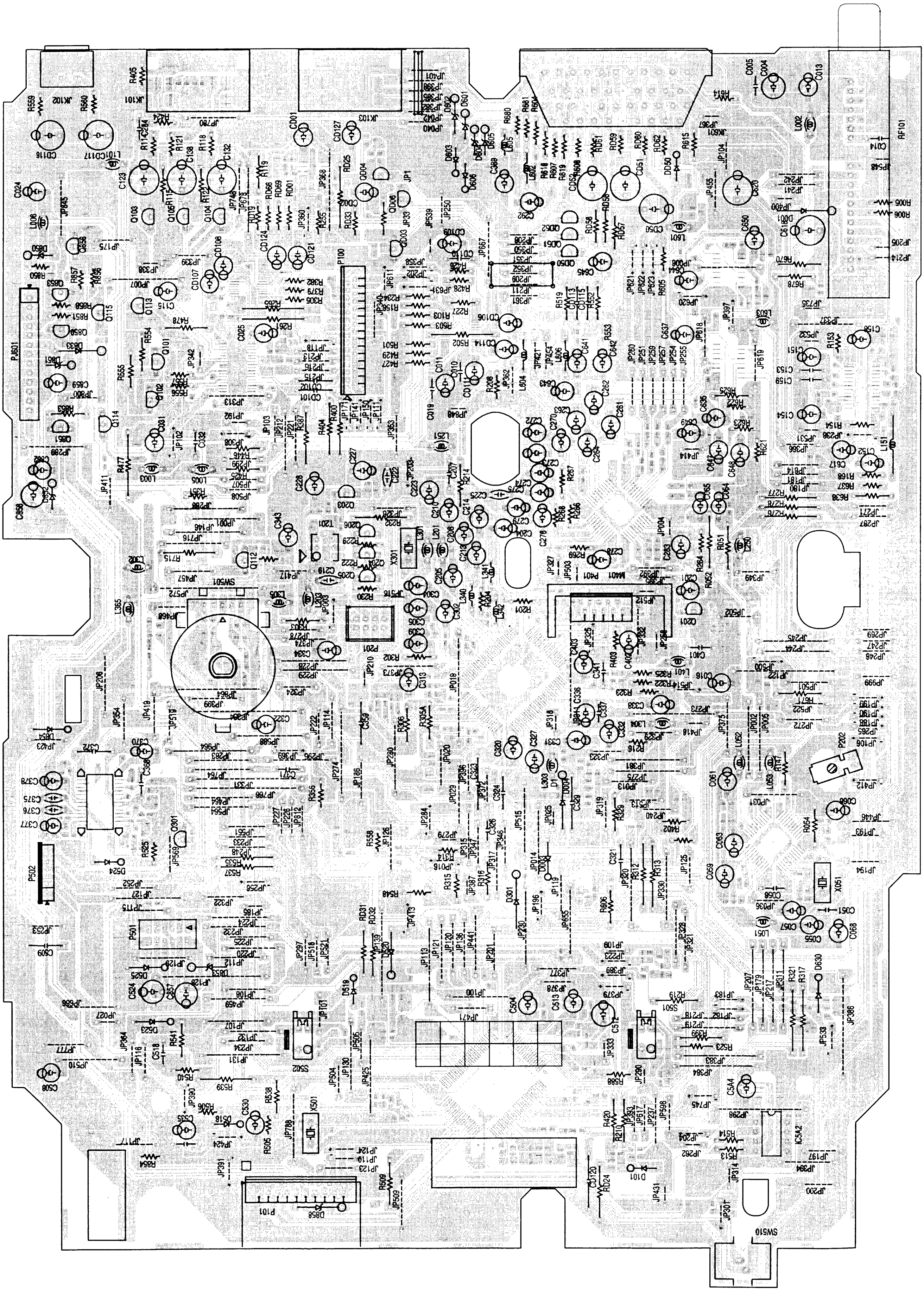
BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER. LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS SHOULD BE PERFORMED TO DETERMINE THAT EXPOSED PARTS ARE PROPERLY INSULATED FROM SUPPLY CIRCUIT.

CAUTION:

THE PARTS IDENTIFIED BY "!" MARKS ARE CRITICAL FOR SAFETY.
REPLACE ONLY WITH TYPE IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT OR SPECIFIED IN THE 'PARTLIST'.
DO NOT DEGRADE THE SAFETY OF THE APPLIANCE THROUGH IMPROPER SERVICING

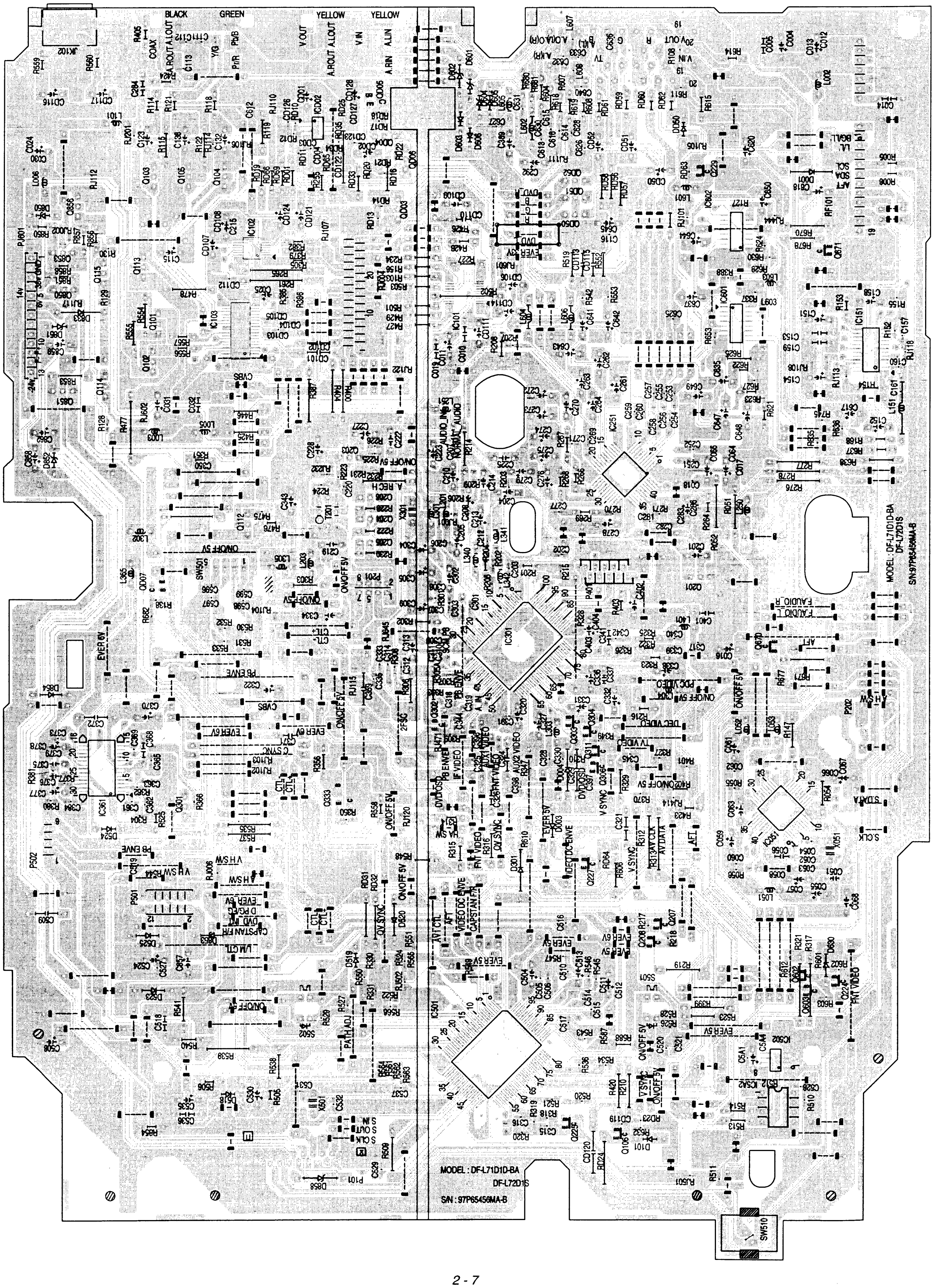
Chassisplatte / Chassis Board

Konventionelle Bestückung – Ansicht von der Lötseite / Conventional Assembly – View of Soler Side



Chassisplatte / Chassis Board

SMD Bestückung – Ansicht von der Lötseite / SMD Assembly – View of Soler Side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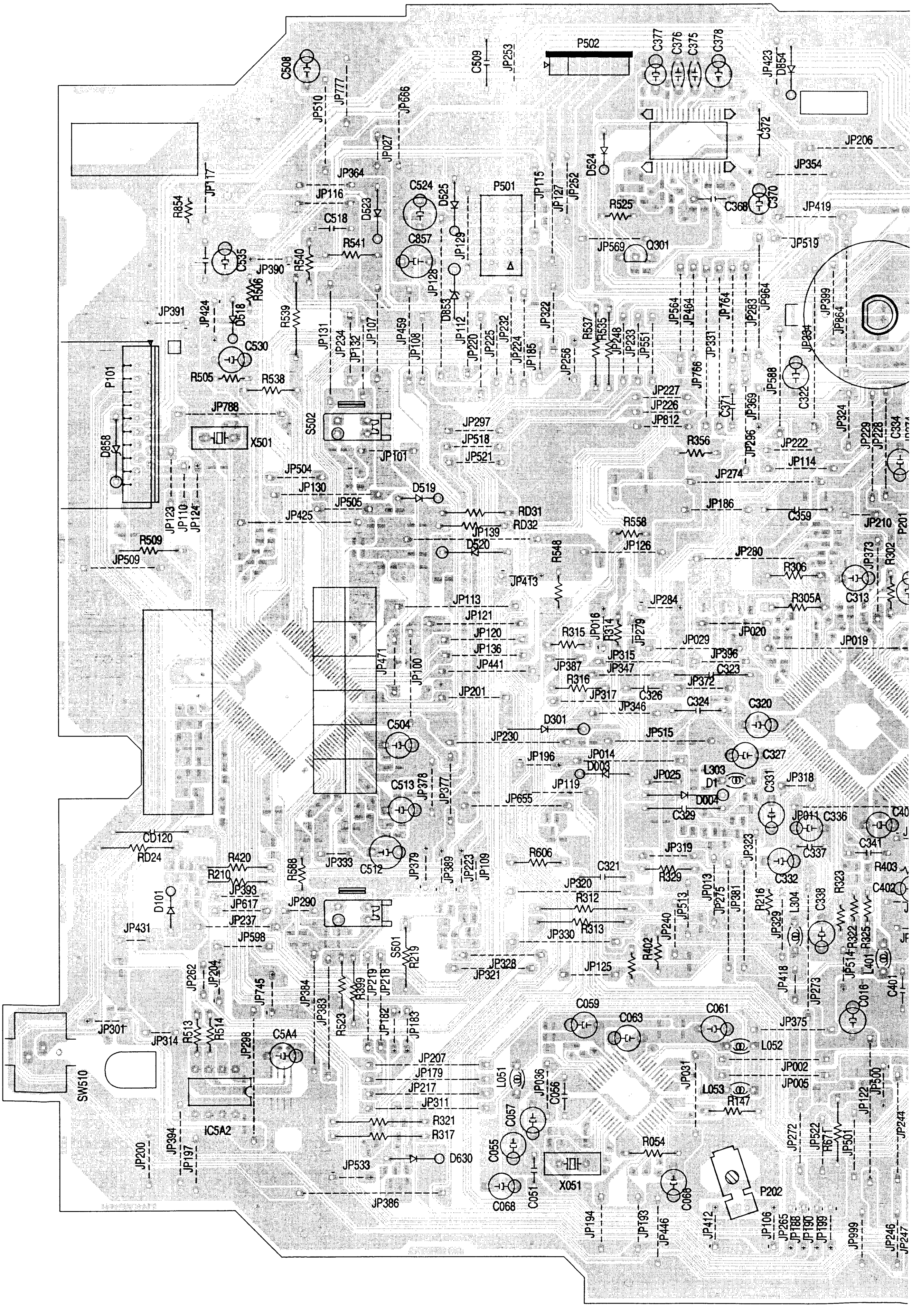
GREEN
YELLOW
YELLOW
IC301
IC501
IC351
SW510
MODEL : DF-L71D1D-BA
DF-L72D1S
S/N : 97P65456MA-B

Chassisplatte / Chassis Board (vergrößert / enlarged)

Konventionelle Bestückung – Ansicht von der Lötseite / Conventional Assembly – View of Soler Side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JP027
JP364
JP116
C524
D525
P501
JP115
JP127
JP252
D524
R525
C368
C370
JP419
R854
JP117
C518
D523
R541
C857
JP129
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Q301
JP519
C535
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R540
R506
JP128
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JP399
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JP424
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R539
JP131
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JP232
JP224
JP185
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JP518
JP521
JP101
JP227
JP226
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JP130
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JP139
RD32
JP186
C359
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JP124
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JP509
D520
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C324
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R329
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JP290
JP320
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R399
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JP218
JP328
JP321
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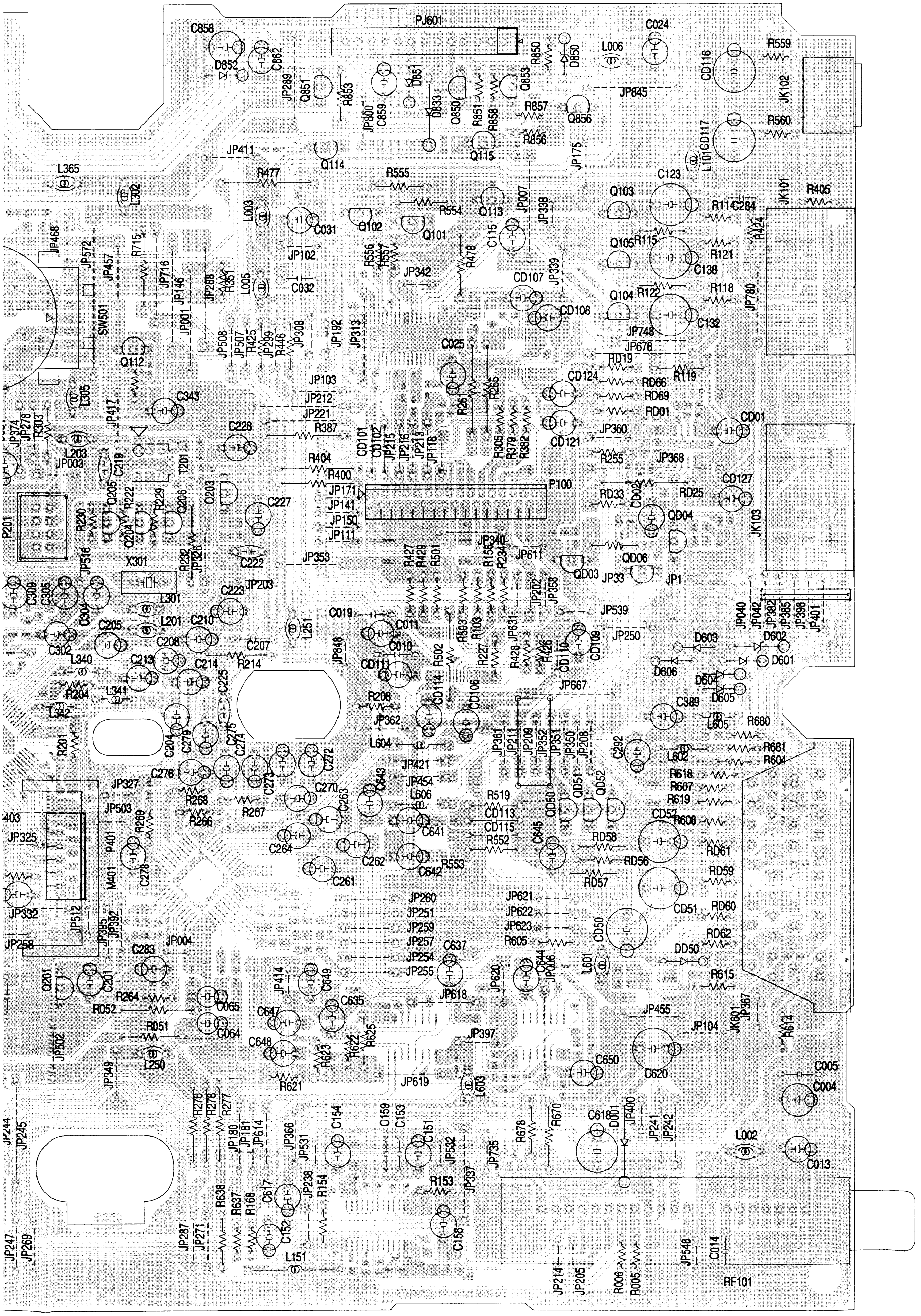
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R851
R858
Q853
R850
D850
R857
Q856
R856
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R560
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Q115
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L365
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R555
R554
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R114
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JK101
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C115
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JP288
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JP213
JP118
R306
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C219
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R255
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Q206
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JK103
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C158
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JP271
JP247
JP269
L151
JP214
JP205
R006
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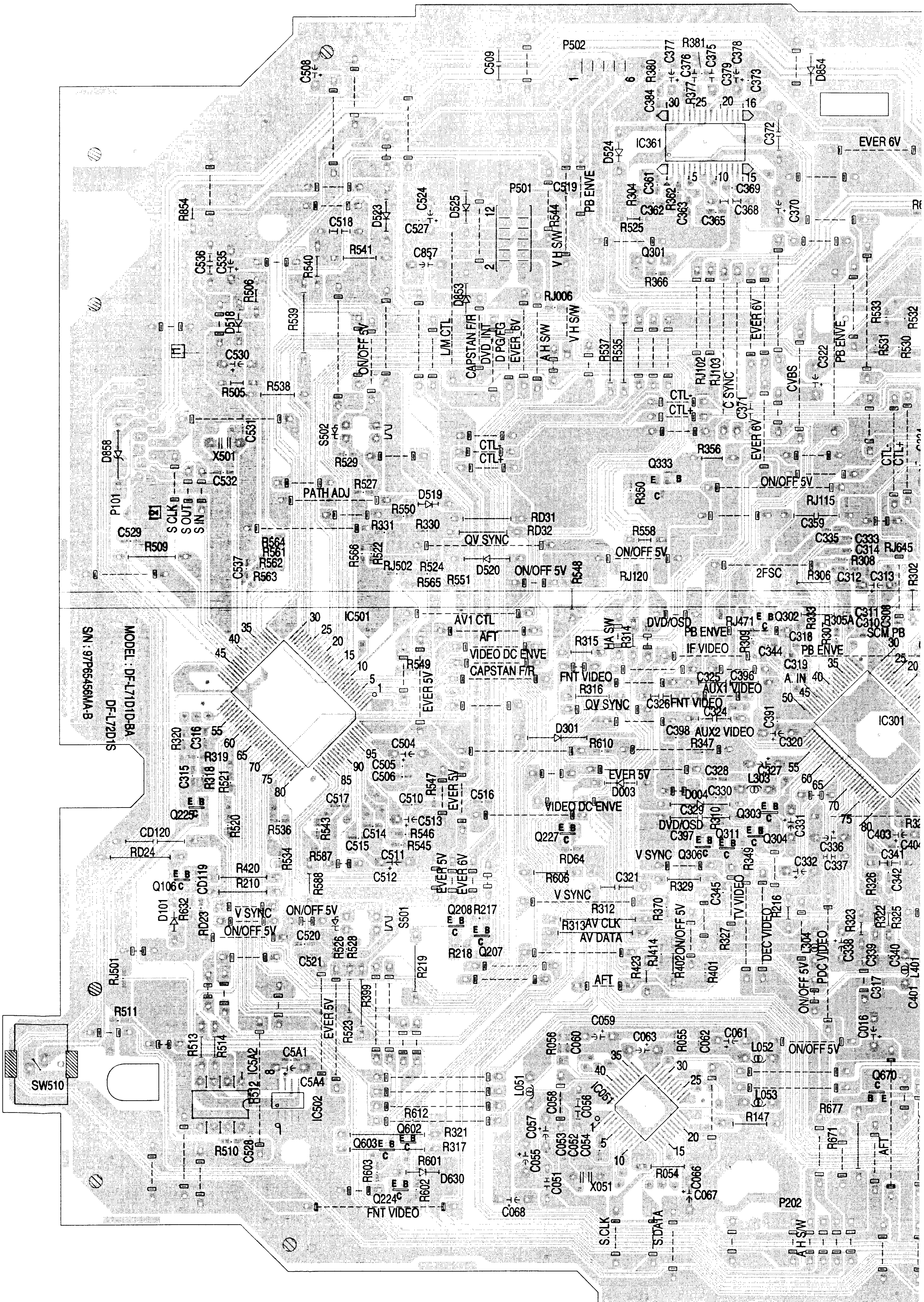
RF101

Chassisplatte / Chassis Board (vergrößert / enlarged)

SMD Bestückung – Ansicht von der Lötseite / SMD Assembly – View of Soler Side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20
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C372
EVER 6V
D524
5
10
15
C369
C361
R304
C362
R362
C363
C365
C368
C370
PB ENVE
P501
C519
R544
V H S/W
C509
C508
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6
12
2
R854
C536
C535
C518
C524
D523
D525
C527
R541
C857
R540
R506
D518
R539
ON/OFF 5V
L/M CTL
D853
CAPSTAN F/R
DVD_INT
D PG/FG
EVER_6V
RJ006
A H S/W
V H S/W
R537
R535
R525
Q301
R366
RJ102
RJ103
C SYNC
C371
EVER 6V
CVBS
C322
PB ENVE
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R531
R530
R532
C530
R505
R538
D858
C531
X501
S502
R529
CTL-
CTL+
R356
Q333
C532
R527
PATH ADJ
D519
R550
R360
ON/OFF 5V
RJ115
P101
S CLK
S OUT
S IN
C529
R509
R331
R330
RD31
RD32
QV SYNC
R558
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C335
C333
C314
RJ645
R308
C537
R564
R561
R562
R563
R566
R522
RJ502
R524
R565
R551
D520
ON/OFF 5V
R548
RJ120
2FSC
R306
C312
C313
R302
MODEL : DF-L71D1D-BA
DF-L72D1S
S/N : 97P6545 6MA-B
IC501
AV1 CTL
AFT
VIDEO DC ENVE
CAPSTAN F/R
R549
EVER 5V
HA SW
R314
R315
DVD/OSD
PB ENVE
RJ471
Q302
R333
R305A
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C310
C308
SCM PB
IF VIDEO
R309
C318
C344
PB ENVE
FNT VIDEO
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C325
C396
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FNT VIDEO
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R320
C316
R319
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C517
C510
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EVER 5V
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D301
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AUX2 VIDEO
R347
C391
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EVER 5V
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D003
D004
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L303
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EVER 5V
C059
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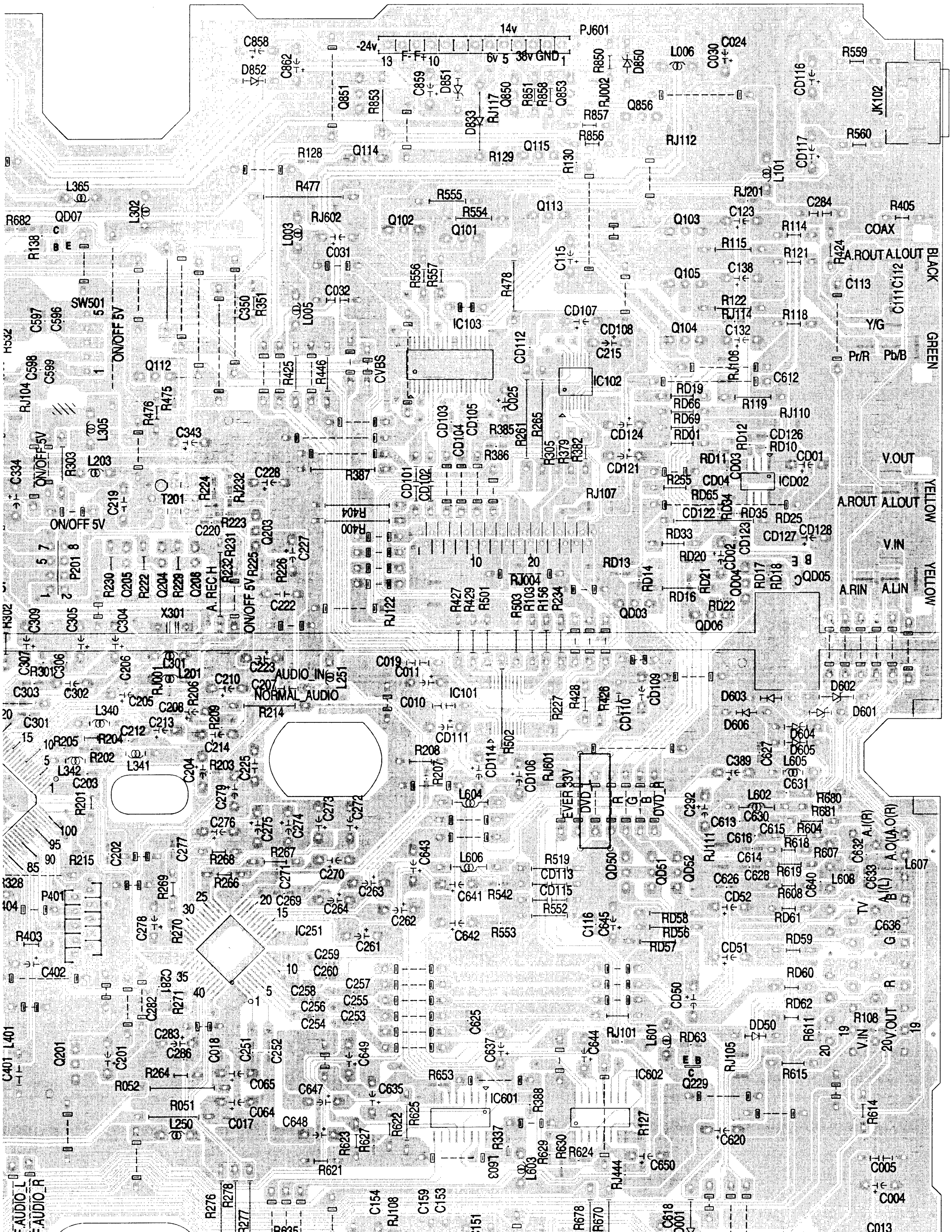
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13
F- F+
10
6v 5
38v GND
1
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D851
RJ117
Q850
R851
R858
Q853
R850
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D850
L006
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C024
R559
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R857
R856
RJ112
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Q113
Q103
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R557
C115
R478
R115
R121
R424
A.ROUT A.LOUT
BLACK
SW501
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C596
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L005
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Q105
C138
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C112
C111
R122
RJ114
R118
Y/G
ON/OFF 5V
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C599
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CD108
C215
Q104
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IC102
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C612
Pr/R
Pb/B
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C343
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CD104
CD105
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R265
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RD69
RD01
RD12
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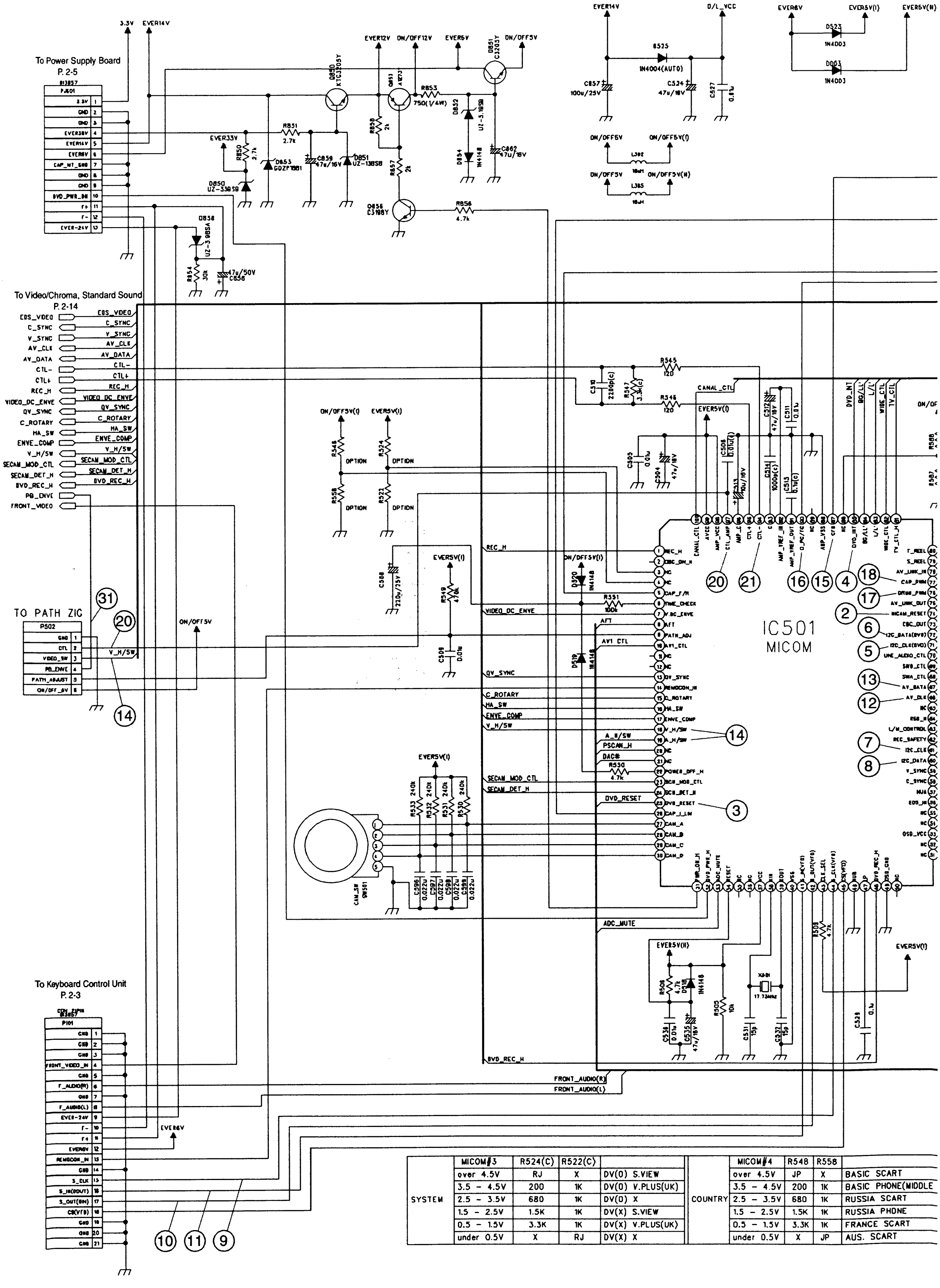
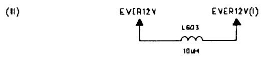
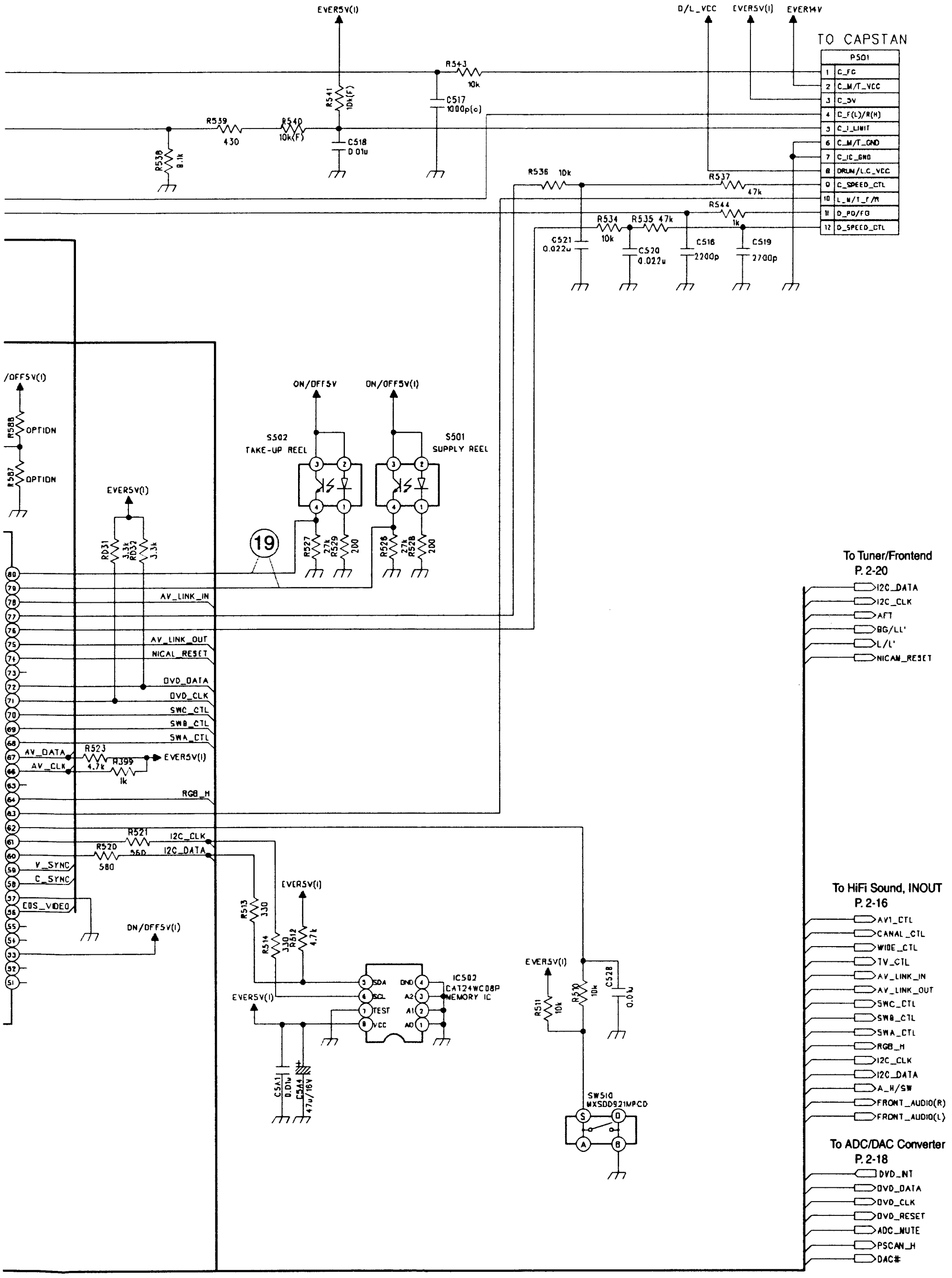
R627
R622
R625
R337
R127
C620
R614
C005
C004
R621
C093
L603
R629
R630
R624
RJ444
C650
F.AUDIO_L
F.AUDIO_R
R276
R278
R277
C154
RJ108
C159
C153
C151
R678
R670
C618
D001
C013
C012
L002
R635
R745
R636
RJ113
R153
Q671
RF101
AFT
SDA
SCL
L/L'
BG/LL'
R638
R637
R168
C617
R154
C152
IC151
C158
19
R006
R005
C014
MODEL : DF-L71D1D-BA
DF-L72D1S
S/N:97P65456MA-B
L151
C161
C160
R152
R155
C157
RJ118

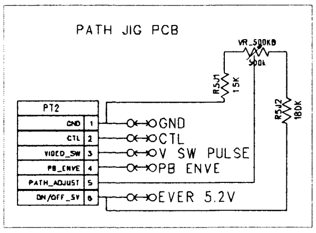
Chassisplatte – Ablaufsteuerung / Chassis Board – Sequence Control


To Power Supply Board
P. 2-5
To Video/Chroma, Standard Sound
P. 2-14
TO PATH ZIC
To Keyboard Control Unit
P. 2-3
IC501
MICOM

	MICOM#3	R524(C)	R522(C)			MICOM#4	R548	R558	
SYSTEM	over 4.5V	RJ	X	DV(0) S.VIEW	COUNTRY	over 4.5V	JP	X	BASIC SCART
	3.5 – 4.5V	200	1K	DV(0) V.PLUS(UK)		3.5 – 4.5V	200	1K	BASIC PHONE(MIDDLE
	2.5 – 3.5V	680	1K	DV(0) X		2.5 – 3.5V	680	1K	RUSSIA SCART
	1.5 – 2.5V	1.5K	1K	DV(X) S.VIEW		1.5 – 2.5V	1.5K	1K	RUSSIA PHONE
	0.5 – 1.5V	3.3K	1K	DV(X) V.PLUS(UK)		0.5 – 1.5V	3.3K	1K	FRANCE SCART
	under 0.5V	X	RJ	DV(X) X		under 0.5V	X	JP	AUS. SCART

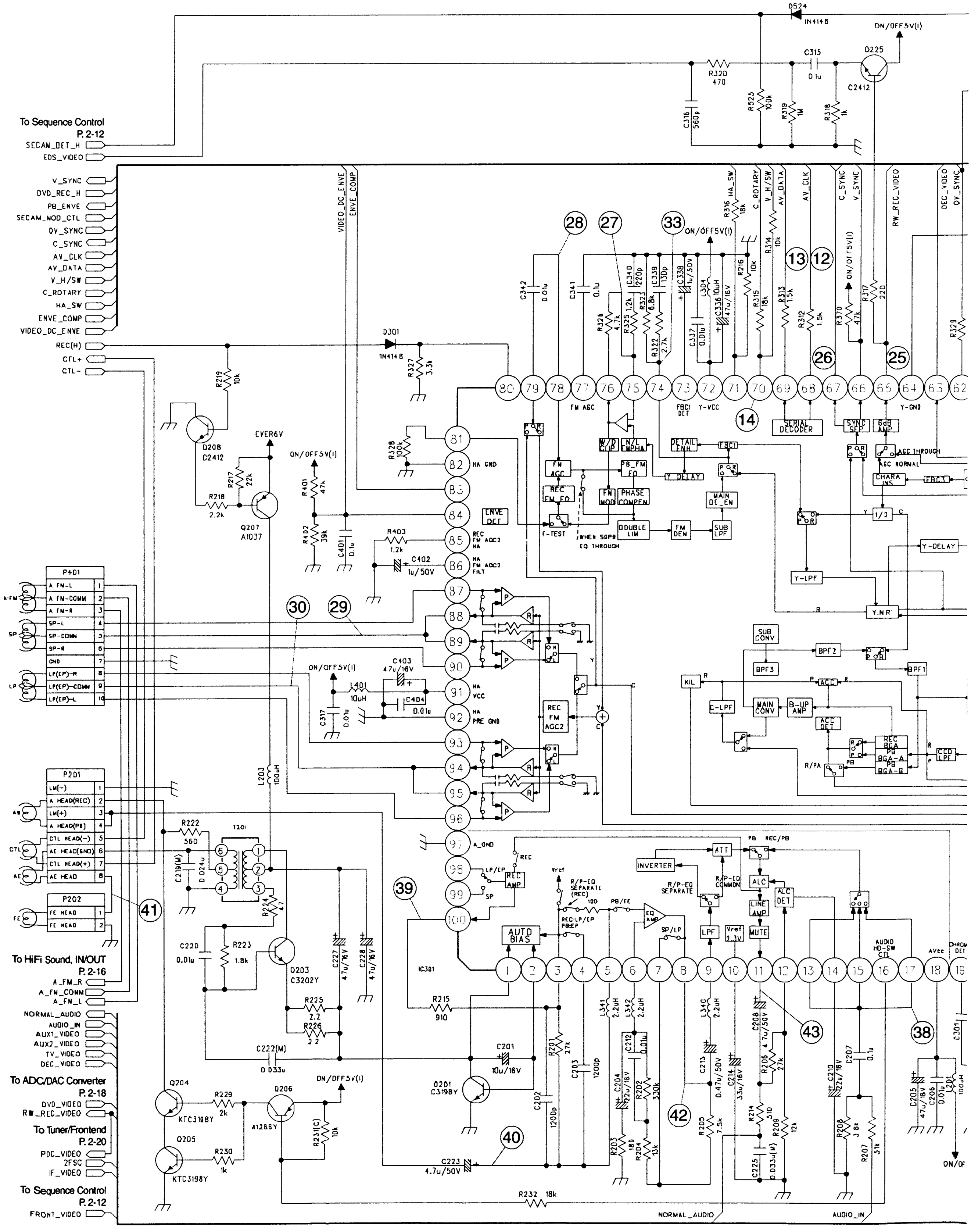

(11)
EVER12V
EVER12V(I)
L603
10uH

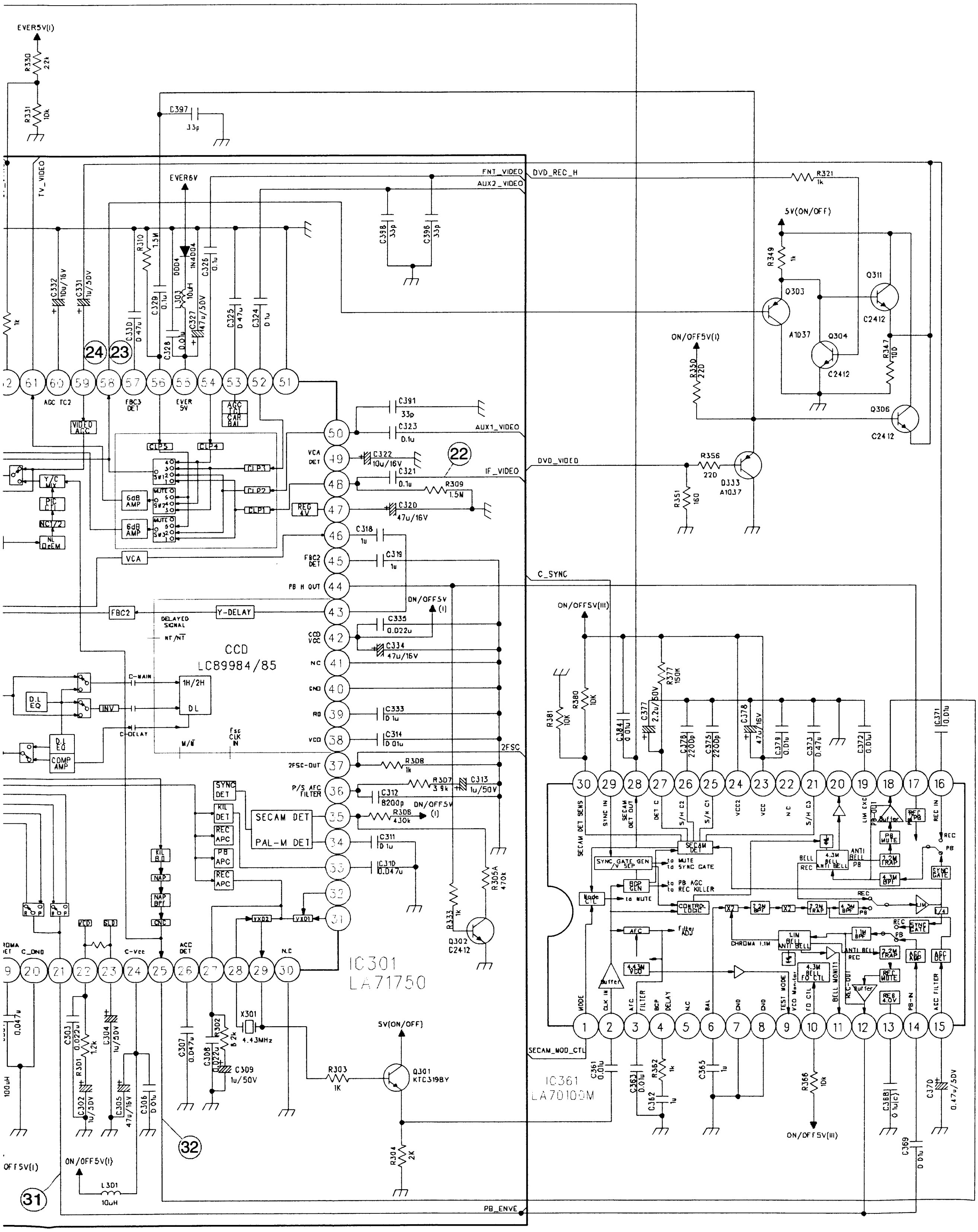

EVER5V(I)
D/L_VCC
EVER5V(I)
EVER14V
TO CAPSTAN
P501
1 C_FC
2 C_M/T_VCC
3 C_5V
4 C_F(L)/R(H)
5 C_I_LIMIT
6 C_M/T_GND
7 C_IC_GND
8 DRUM/L.C_VCC
9 C_SPEED_CTL
10 L_M/T_F/R
11 D_PG/FG
12 D_SPEED_CTL
R543 10k
R541 10k(F)
C517 1000p(c)
R539 430
R540 10k(F)
C518 0.01u
R538 8.1k
R536 10k
R537 47k
R544 1k
R534 10k
R535 47k
C521 0.022u
C520 0.022u
C516 2200p
C519 2700p
/OFF5V(I)
R588 OPTION
R587 OPTION
ON/OFF5V
ON/OFF5V(I)
S502 TAKE-UP REEL
S501 SUPPLY REEL
EVER5V(I)
R531 3.3k
R532 3.3k
19
R527 27k
R529 200
R526 27k
R528 200
AV_LINK_IN
AV_LINK_OUT
NICAL_RESET
DVD_DATA
DVD_CLK
SWC_CTL
SWB_CTL
SWA_CTL
AV_DATA
AV_CLK
R523 4.7k
R399 1k
EVER5V(I)
RGB_H
R521
R520 560
580
I2C_CLK
I2C_DATA
V_SYNC
C_SYNC
CBS_VIDEO
ON/OFF5V(I)
80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51
EVER5V(I)
R513 330
R514 330
R512 4.7k
IC502 CAT24WC08P MEMORY IC
5 SDA
6 SCL
7 TEST
8 VCC
GND 4
A2 3
A1 2
A0 1
EVER5V(I)
C541 0.01u
C544 47u/16V
EVER5V(I)
R511 10k
R530 10k
C528 0.01u
SW510 MXSDD921MPCD
S D A B
To Tuner/Frontend
P. 2-20
I2C_DATA
I2C_CLK
AFT
BG/LL'
L/L'
NICAM_RESET
To HiFi Sound, INOUT
P. 2-16
AV1_CTL
CANAL_CTL
WIDE_CTL
TV_CTL
AV_LINK_IN
AV_LINK_OUT
SWC_CTL
SWB_CTL
SWA_CTL
RGB_H
I2C_CLK
I2C_DATA
A_H/SW
FRONT_AUDIO(R)
FRONT_AUDIO(L)
To ADC/DAC Converter
P. 2-18
DVD_INT
DVD_DATA
DVD_CLK
DVD_RESET
ADC_MUTE
PSCAN_H
DAC#


PATH JIG PCB
VR_500KB
500k
R571 15K
R572 180K
PT2
GND 1
CTL 2
VIDEO_SW 3
PB_ENVE 4
PATH_ADJUST 5
ON/OFF_5V 6
GND
CTL
V SW PULSE
PB ENVE
EVER 5.2V

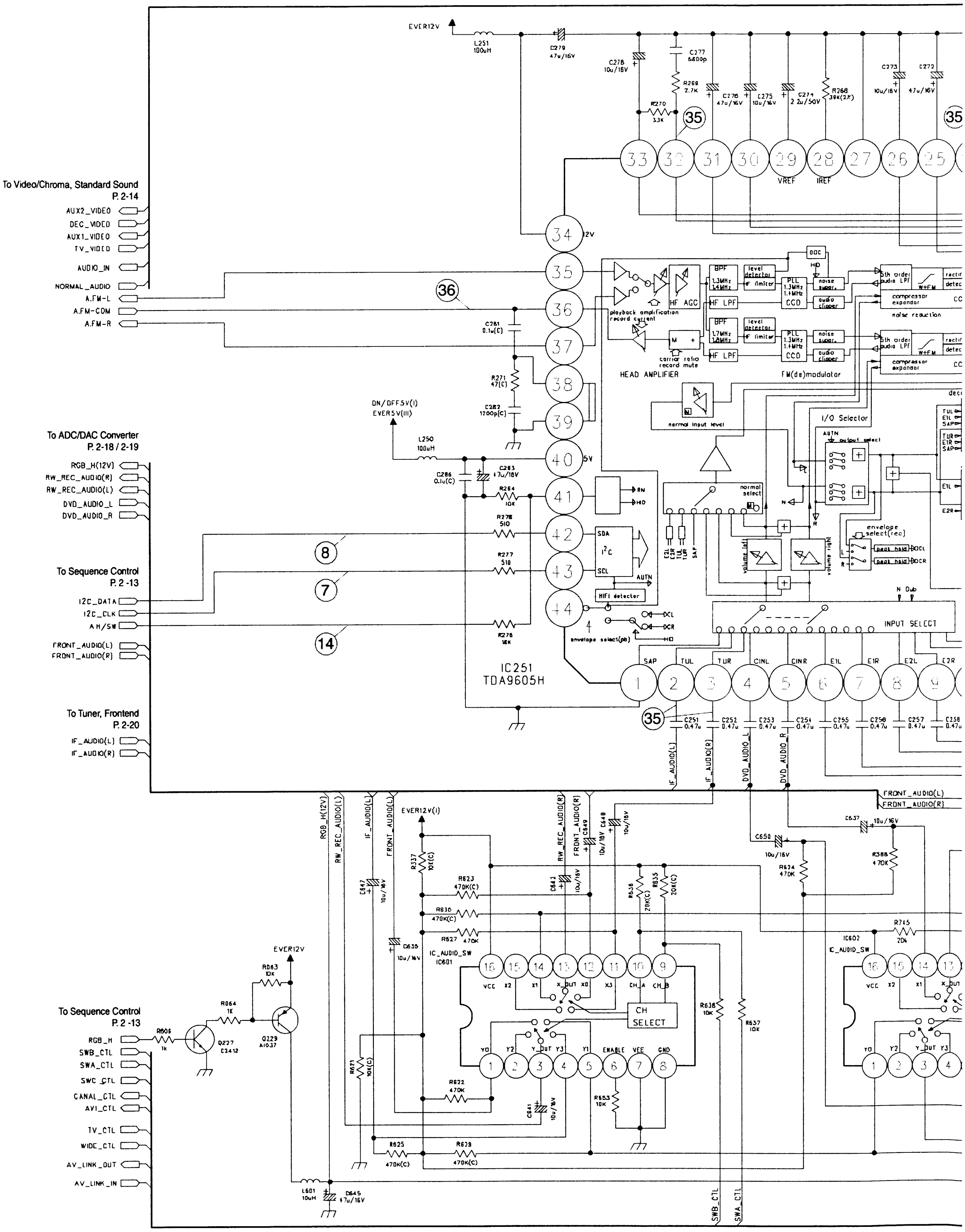
	ATS	MICOM#86	R588	R587(C)	
		HIGH	JP	X	ON
E EAST)		LOW	X	RJ	OFF

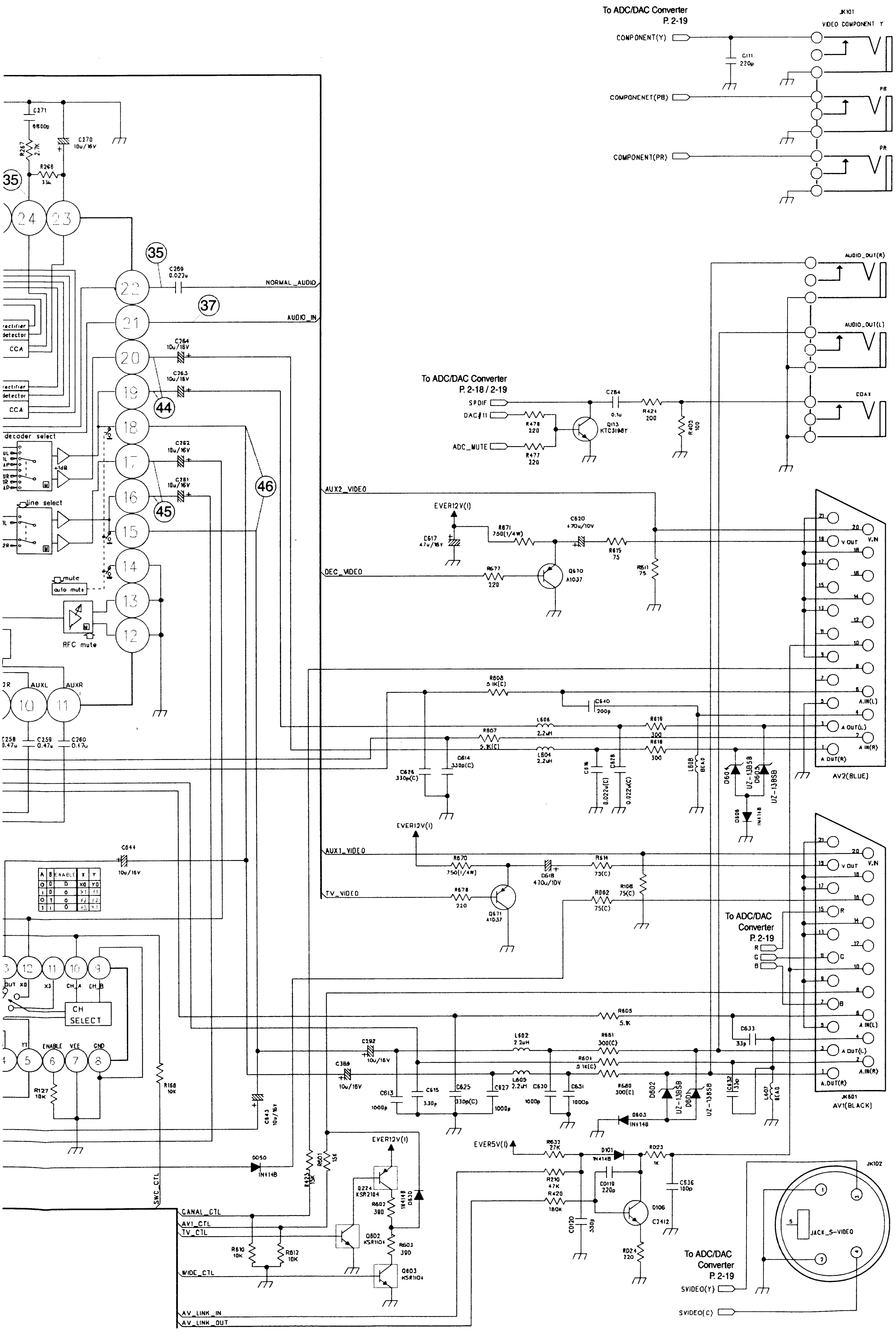
Chassisplatte – Video/Chroma, Standard-Ton
Chassis Board – Video/Chroma, Standard-Sound


To Sequence Control
P. 2-12
SECAN_DET_H
EDS_VIDEO
V_SYNC
DVD_REC_H
PB_ENVE
SECAM_NOD_CTL
OV_SYNC
C_SYNC
AV_CLK
AV_DATA
V_H/SW
C_ROTARY
HA_SW
ENVE_COMP
VIDEO_DC_ENVE
REC(H)
CTL+
CTL-
D524
1N4148
ON/OFF5V(I)
C315
0.1u
Q225
C2412
R320
470
C316
560p
R525
100k
R319
1M
R318
1k
VIDEO_DC_ENVE
ENVE_COMP
HA_SW
C_ROTARY
V_H/SW
AV_DATA
AV_CLK
C_SYNC
V_SYNC
RW_REC_VIDEO
DEC_VIDEO
OV_SYNC
R316 18k
R314 10k
R216 10k
R315 18k
R313 1.5k
R312 1.5k
R370 47k
R317 220
R329
C342 0.01u
C341 0.1u
C340 220p
C339 130p
C338 1u/50V
L304 10uH
C336 47u/16V
C337 0.01u
R326 4.7k
R325 1.2k
R323 6.8k
R322 2.7k
D301
1N4148
R327
3.3k
R219
10k
Q208
C2412
EVER6V
R217
22k
R218
2.2k
Q207
A1037
ON/OFF5V(I)
R401
47k
R402
39k
C401
0.1u
R328
100k
R403
1.2k
C402
1u/50V
FM AGC
FBC1 DET
Y-VCC
Y-GND
SERIAL DECODER
SYNC SEP
6dB AMP
AGC THROUGH
AGC NORMAL
CHARA INS
FBC1
1/2
Y-DELAY
Y-LPF
Y.N.R
DETAIL ENH
W/D CLIP
N/L EMPHA
PB_FM EQ
Y DELAY
MAIN DE_EN
FM AGC
REC FM EQ
FM MOD
PHASE COMPEN
DOUBLE LIM
FM DEN
SUB LPF
ENVE DET
f-TEST
WHEN SQPB EQ THROUGH
HA GND
REC FM AGC2 HA
HA FM AGC2 FILT
HA VCC
HA PRE GND
A_GND
REC FM AGC2
SUB CONV
BPF2
BPF3
BPF1
KIL
ACC
C-LPF
MAIN CONV
B-UP AMP
ACC DET
REC BGA
PB BGA-A
PB BGA-B
CCD LPF
R/PA
P401
A FM-L
A FM-COMM
A FM-R
SP-L
SP-COMM
SP-R
GND
LP(EP)-R
LP(EP)-COMM
LP(EP)-L
A-FM
SP
LP
ON/OFF5V(I)
C403
47u/16V
L401
10uH
C404
0.01u
C317
0.01u
L203
100uH
P201
LM(-)
A HEAD(REC)
LM(+)
A HEAD(PB)
CTL HEAD(-)
AE HEAD(GND)
CTL HEAD(+)
AE HEAD
AW
CTL
AE
P202
FE HEAD
FE HEAD
FE
R222
560
T201
C219(M)
0.024u
R224
4.7
C220
0.01u
R223
1.8k
Q203
C3202Y
C227
47u/16V
C228
47u/16V
R225
2.2
R226
2.2
C222(M)
0.033u
IC301
R215
910
C201
10u/16V
Q201
C3198Y
Q204
KTC3198Y
R229
2k
Q206
A1288Y
ON/OFF5V(I)
R231(C)
10k
Q205
KTC3198Y
R230
1k
C223
4.7u/50V
R232 18k
NORMAL_AUDIO
AUDIO_IN
REC
LP/EP
REC AMP
SP
AUTO BIAS
Vref
R/P-EQ SEPARATE (REC)
100
PB/EE
REC:LP/EP
PB:EP
EQ AMP
SP/LP
R/P-EQ SEPARATE
R/P-EQ COMMON
INVERTER
ATT
PB REC/PB
ALC
ALC DET
LINE AMP
LPF
Vref 2.1V
MUTE
AUDIO HD-SW CTL
AVcc
DROM DET
C202
1200p
R201
27k
C203
1200p
L341
2.2uH
L342
2.2uH
L340
2.2uH
C212
0.01u
C204
22u/16V
R202
330k
R203
180
R204
13k
C213
0.47u/50V
C214
33u/16V
C208
4.7u/50V
R206
27k
R205
7.5k
R214
510
R209
12k
C225
0.033u(M)
C210
22u/16V
C207
0.1u
R208
3.6k
R207
51k
C205
47u/16V
C206
0.01u
L301
100uH
C301
ON/OF
To HiFi Sound, IN/OUT
P. 2-16
A_FM_R
A_FN_COMM
A_FN_L
NORMAL_AUDIO
AUDIO_IN
AUX1_VIDEO
AUX2_VIDEO
TV_VIDEO
DEC_VIDEO
To ADC/DAC Converter
P. 2-18
DVD_VIDEO
RW_REC_VIDEO
To Tuner/Frontend
P. 2-20
PDC_VIDEO
2FSC
IF_VIDEO
To Sequence Control
P. 2-12
FRONT_VIDEO
12
13
14
25
26
27
28
29
30
33
38
39
40
41
42
43

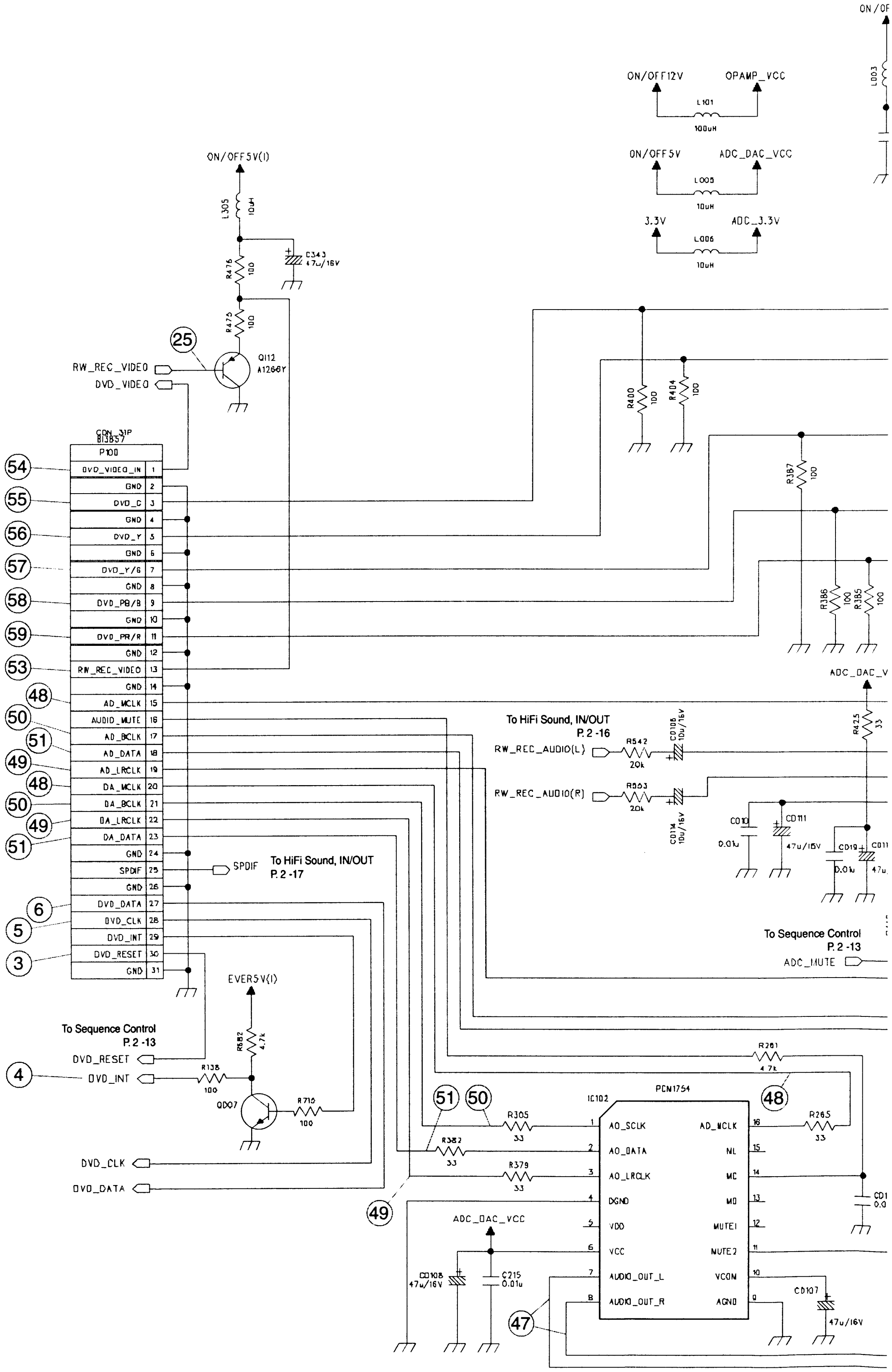

EVER5V(I)
R330 22k
R331 10k
C397 33p
TV_VIDEO
EVER6V
FNT_VIDEO
AUX2_VIDEO
DVD_REC_H
R321 1k
5V(ON/OFF)
R349 1k
Q303
Q311
C2412
A1037
Q304
ON/OFF5V(I)
R350 220
R347 10D
Q306
C2412
C398 33p
C396 33p
R310 1.5M
D004 1N4004
C326 0.1u
C332 10u/16V
C331 1u/50V
C329 0.1u
L302 10uH
C327 47u/50V
C325 0.47u
C324 0.1u
C330 0.47u
C328 0.01u
24
23
AGC TC2
FBC3 DET
EVER 5V
AGC TC1 CAR BAL
VIDEO AGC
CLP5
CLP4
CLP3
CLP2
CLP1
Y/C MIX
PIC CTL
NC1/2
NL DeEM
6dB AMP
6dB AMP
MUTE
SW1
SW2
SW3
VCA
REG 4V
C391 33p
C323 0.1u
AUX1_VIDEO
VCA DET
C322 10u/16V
C321 0.1u
22
IF_VIDEO
DVD_VIDEO
R309 1.5M
R356 220
Q333 A1037
R351 160
C320 47u/16V
C318 1u
FBC2 DET
C319 1u
PB H OUT
C_SYNC
ON/OFF5V (I)
FBC2
Y-DELAY
DELAYED SIGNAL
NT/NT
CCD LC89984/85
CCD VCC
C335 0.022u
C334 47u/16V
NC
GND
RO
C333 0.1u
VCO
C314 0.01u
C-MAIN
1H/2H
DL
D.L EQ
INV
C-DELAY
Fsc CLK IN
M/N
D.L EQ
COMP AMP
2FSC-OUT
R308 1k
2FSC
ON/OFF5V(III)
R381 10K
R380 10K
R377 150K
C384 0.01u
C377 2.2u/50V
C376 2200p
C375 2200p
C378 47u/16V
C379 0.01u
C373 0.47u
C372 0.01u
C371 0.01u
P/S AFC FILTER
SYNC DET
C312 8200p
R307 3.9k
C313 1u/50V
KIL DET
SECAM DET
R306 430k
ON/OFF5V (I)
REC APC
PAL-M DET
PB APC
C311 0.1u
REC APC
C310 0.047u
KIL B.D
NAP
NAP BPF
CNC
VXO2
VXO1
R333 1k
R305A 470k
Q302 C2412
IC301 LA71750
VCO
SLD
C_ONO
C-Vcc
ACC DET
N.C
X301 4.43MHz
R302 8.2k
C309 1u/50V
C308 0.022u
C307 0.047u
C303 0.022u
R301 1.2k
C304 1u/50V
C302 1u/50V
C305 47u/16V
C306 0.01u
32
31
ON/OFF5V(I)
L301 10uH
5V(ON/OFF)
R303 1K
Q301 KTC3198Y
R304 2K
PB_ENVE
SECAM_MOD_CTL
IC361 LA70100M
SECAM DET SENS
SYNC IN
SECAM DET OUT
DET C
S/H C2
S/H C1
VCC2
VCC
NC
S/H C3
LIM CXL
REC IN
SECAM DET
SYNC GATE GEN /V SEP
to MUTE
to SYNC GATE
BGP GEN
to PB AGC
to REC KILLER
Mode CTL
to MUTE
CONTROL LOGIC
AFC
Filter ADJ
4.43M VCO
Buffer
BELL REC
4.3M BELL
ANTI BELL
PB
2.2M TRAP
4.3M BPF
PB MUTE
REC
SYNC GATE
LIM
1.1M BPF
ANTI BELL
2.2M TRAP
ACC AMP
ACC DET
REC MUTE
REG 4.0V
CHROMA 1.1M
4.3M BELL F0 CTL
Buffer
MODE
CLK IN
AFC FILTER
BGP DELAY
NC
BAL
GND
GND
TEST MODE
VCO Monitor
F0 CTL
BELL MONIT1
REC-OUT
PB-IN
ACC FILTER
C361 0.01u
C363 0.01u
R362 1k
C362 1u
C365 1u
R366 10k
ON/OFF5V(III)
C368 0.1u(c)
C370 0.47u/50V
C369 0.01u
100uH
0.047u
OFF5V(I)

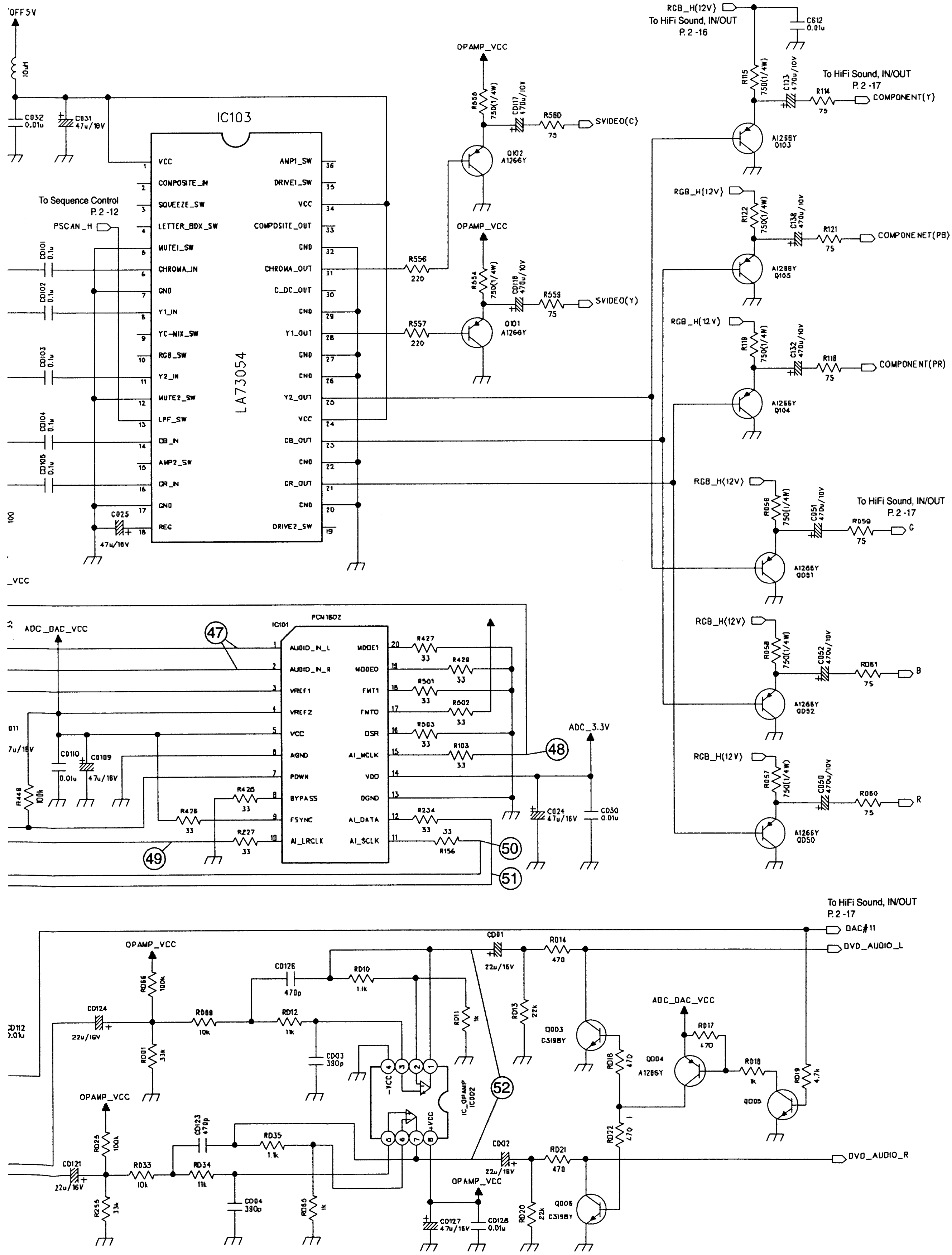
Chassisplatte – HiFi-Ton, IN/OUT / Chassis Board – HiFi Sound, IN/OUT


To Video/Chroma, Standard Sound
P. 2-14
AUX2_VIDEO
DEC_VIDEO
AUX1_VIDEO
TV_VIDEO
AUDIO_IN
NORMAL_AUDIO
A.FM-L
A.FM-COM
A.FM-R
To ADC/DAC Converter
P. 2-18 / 2-19
RGB_H(12V)
RW_REC_AUDIO(R)
RW_REC_AUDIO(L)
DVD_AUDIO_L
DVD_AUDIO_R
To Sequence Control
P. 2-13
I2C_DATA
I2C_CLK
AH/SW
FRONT_AUDIO(L)
FRONT_AUDIO(R)
To Tuner, Frontend
P. 2-20
IF_AUDIO(L)
IF_AUDIO(R)
To Sequence Control
P. 2-13
RGB_H
SWB_CTL
SWA_CTL
SWC_CTL
CANAL_CTL
AV1_CTL
TV_CTL
WIDE_CTL
AV_LINK_OUT
AV_LINK_IN
EVER12V
L251 100uH
C279 47u/16V
C278 10u/18V
C277 6800p
R269 2.7K
R270 3.3K
C276 47u/16V
C275 10u/16V
C274 2.2u/50V
R268 39K(2%)
C273 10u/16V
C272 47u/16V
35
VREF
IREF
12V
36
C281 0.1u(C)
R271 47(C)
C282 1200p(C)
ON/OFF5V(I)
EVER5V(III)
L250 100uH
C286 0.1u(C)
C283 47u/16V
R284 10K
R278 510
R277 510
R276 18K
5V
8
7
14
IC251
TDA9605H
DOC
HID
BPF
1.3MHz
1.4MHz
1.7MHz
level detector
HF limiter
PLL
1.3MHz
1.4MHz
CCO
noise suppr.
audio clipper
HF AGC
HF LPF
playback amplification
record current
carrier ratio
record mute
HEAD AMPLIFIER
FM(de)modulator
5th order audio LPF
W+FM
compressor expander
noise reduction
rectif
detec
normal input level
I/O Selector
AUTN
output select
normal select
N
R
volume left
volume right
envelope select(rec)
peak hold
DCL
DCR
RN
HID
SDA
I²C
SCL
HIFI detector
envelope select(pb)
N Dub
INPUT SELECT
SAP
TUL
TUR
CINL
CINR
E1L
E1R
E2L
E2R
TUL
E1L
SAP
TUR
E1R
E2R
C251 0.47u
C252 0.47u
C253 0.47u
C254 0.47u
C255 0.47u
C256 0.47u
C257 0.47u
C258 0.47u
IF_AUDIO(L)
IF_AUDIO(R)
DVD_AUDIO_L
DVD_AUDIO_R
FRONT_AUDIO(L)
FRONT_AUDIO(R)
RGB_H(12V)
RW_REC_AUDIO(L)
IF_AUDIO(L)
FRONT_AUDIO(L)
EVER12V(I)
R637 10K(C)
C647 10u/16V
R623 470K(C)
R830 470K(C)
R627 470K
RW_REC_AUDIO(R)
FRONT_AUDIO(R)
IF_AUDIO(R)
C649 10u/16V
C648 10u/16V
C642 10u/16V
R638 20K(C)
R635 20K(C)
C650 10u/16V
R634 470K
C637 10u/16V
R388 470K
R715 20K
C635 10u/16V
IC_AUDIO_SW
IC601
VCC
X2
X1
X_OUT
X0
X3
CH_A
CH_B
CH SELECT
Y0
Y2
Y_OUT
Y3
Y1
ENABLE
VEE
GND
R636 10K
R637 10K
R653 10K
R621 10K(C)
R622 470K
C641 10u/16V
R625 470K(C)
R629 470K(C)
IC602
IC_AUDIO_SW
EVER12V
R063 10K
R064 1K
R606 1K
Q227 C2412
Q229 A1037
L601 10uH
C645 47u/16V
SWB_CTL
SWA_CTL

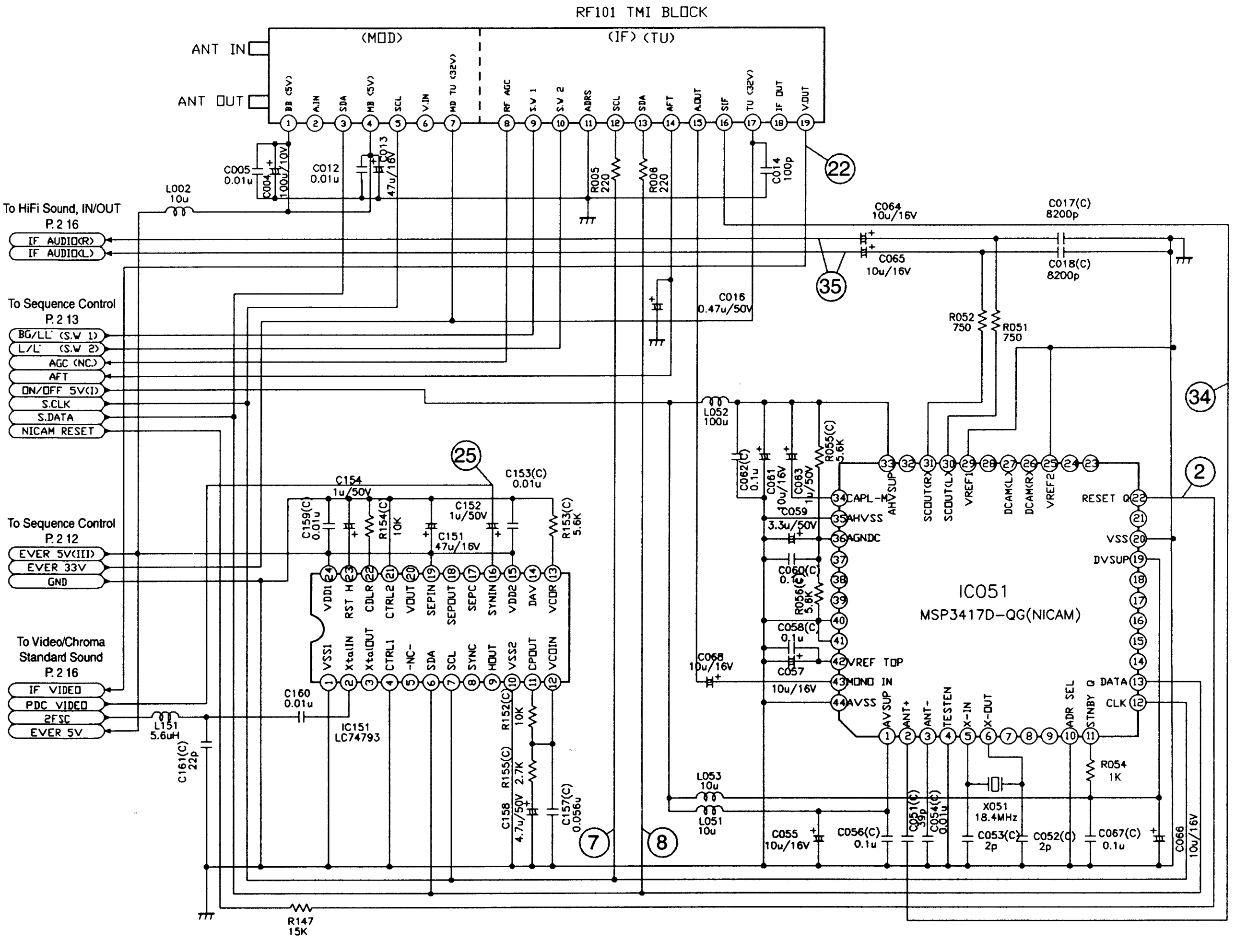

To ADC/DAC Converter
P. 2-19
COMPONENT(Y)
COMPONENET(PB)
COMPONENT(PR)
C111
220p
JK101
VIDEO COMPONENT Y
PB
PR
AUDIO_OUT(R)
AUDIO_OUT(L)
COAX
To ADC/DAC Converter
P. 2-18 / 2-19
SPDIF
DAC#11
ADC_MUTE
C284
0.1u
R424
200
R403
100
R478
220
R477
220
Q113
KTC3198Y
C271
6800p
R267
2.7K
C270
10u/16V
R268
33k
35
24
23
22
21
20
19
18
17
16
15
14
13
12
35
37
44
45
46
C269
0.022u
NORMAL_AUDIO
AUDIO_IN
C264
10u/16V
C263
10u/16V
C262
10u/16V
C261
10u/16V
rectifier
detector
CCA
decoder select
+1dB
line select
mute
auto mute
RFC mute
AUXL
AUXR
10
11
C258
0.47u
C259
0.47u
C260
0.47u
AUX2_VIDEO
EVER12V(I)
C617
47u/16V
R671
750(1/4W)
C620
470u/10V
R615
75
R511
75
DEC_VIDEO
R677
220
Q670
A1037
21
20
19
V OUT
V.IN
18
17
16
15
14
13
12
11
10
9
8
7
6
5
A.IN(L)
4
3
A OUT(L)
2
A IN(R)
1
A OUT(R)
AV2(BLUE)
R808
5.1K(C)
C640
200p
L606
2.2uH
R619
300
R807
5.1K(C)
L604
2.2uH
R618
300
C614
330p(C)
C626
330p(C)
C629
0.022u(C)
C628
0.022u(C)
L608
BEAD
D604
UZ-13BSB
D605
UZ-13BSB
D606
1N4148
EVER12V(I)
AUX1_VIDEO
C644
10u/16V
R670
750(1/4W)
C618
470u/10V
R614
75(C)
R106
75(C)
TV_VIDEO
R678
220
Q671
A1037
R062
75(C)
To ADC/DAC
Converter
P. 2-19
R
G
B
A B ENABLE X Y
0 0 0 X0 Y0
1 0 0 X1 Y1
0 1 0 X2 Y2
1 1 0 X3 Y3
12
11
10
9
OUT X0
X3
CH_A
CH_B
CH SELECT
Y1
ENABLE
VEE
GND
5
6
7
8
R127
10K
R168
10K
C643
10u/16V
R605
5.1K
C633
33p
C292
10u/16V
L602
2.2uH
R681
300(C)
C389
10u/16V
R601
5.1K(C)
C613
1000p
C615
330p
C625
330p(C)
C627
1000p
L605
2.2uH
C630
1000p
C631
1000p
R680
300(C)
D602
UZ-13BSB
D601
UZ-13BSB
C632
33p
L607
BEAD
D603
1N4148
JK501
AV1(BLACK)
EVER12V(I)
EVER5V(I)
R632
27K
D101
1N4148
R023
1K
C536
100p
RZ10
47K
C0119
220p
R420
180K
Q106
C2412
C0120
330p
R024
220
D050
1N4148
R423
15K
R601
15K
Q224
KSR2104
R602
390
1N4148
D630
Q602
KSR1104
R603
390
Q603
KSR1104
R610
10K
R612
10K
SWC_CTL
CANAL_CTL
AV1_CTL
TV_CTL
WIDE_CTL
AV_LINK_IN
AV_LINK_OUT
JK102
JACK_S-VIDEO
1
2
3
4
5
To ADC/DAC
Converter
P. 2-19
SVIDEO(Y)
SVIDEO(C)

Chassisplatte / Chassis Board – ADC/DAC-Converter


ON/OF
L003
ON/OFF12V
OPAMP_VCC
L101
100uH
ON/OFF5V
ADC_DAC_VCC
L005
10uH
3.3V
ADC_3.3V
L006
10uH
ON/OFF5V(I)
L305
10uH
C343
47u/16V
R476
100
R475
100
25
Q112
A1266Y
RW_REC_VIDEO
DVD_VIDEO
CON_31P
B13857
P100
DVD_VIDEO_IN 1
GND 2
DVD_C 3
GND 4
DVD_Y 5
GND 6
DVD_Y/G 7
GND 8
DVD_PB/B 9
GND 10
DVD_PR/R 11
GND 12
RW_REC_VIDEO 13
GND 14
AD_MCLK 15
AUDIO_MUTE 16
AD_BCLK 17
AD_DATA 18
AD_LRCLK 19
DA_MCLK 20
DA_BCLK 21
DA_LRCLK 22
DA_DATA 23
GND 24
SPDIF 25
GND 26
DVD_DATA 27
DVD_CLK 28
DVD_INT 29
DVD_RESET 30
GND 31
54
55
56
57
58
59
53
48
50
51
49
48
50
49
51
6
5
3
4
R400
100
R404
100
R387
100
R386
100
R385
100
ADC_DAC_V
R425
33
To HiFi Sound, IN/OUT
P. 2 -16
RW_REC_AUDIO(L)
R542
20k
CD105
10u/16V
RW_REC_AUDIO(R)
R563
20k
CD114
10u/16V
CD10
0.01u
CD111
47u/16V
CD19
0.01u
CD11
47u
SPDIF
To HiFi Sound, IN/OUT
P. 2 -17
To Sequence Control
P. 2 -13
ADC_MUTE
EVER5V(I)
R682
4.7k
To Sequence Control
P. 2 -13
DVD_RESET
DVD_INT
R138
100
QD07
R710
100
DVD_CLK
DVD_DATA
R281
4.7k
51
50
48
49
47
IC102
PCM1754
R305
33
R382
33
R379
33
R265
33
1 AD_SCLK
2 AD_DATA
3 AD_LRCLK
4 DGND
5 VDD
6 VCC
7 AUDIO_OUT_L
8 AUDIO_OUT_R
16 AD_MCLK
15 NL
14 MC
13 MD
12 MUTE1
11 MUTE2
10 VCOM
9 AGND
ADC_DAC_VCC
CD108
47u/16V
C215
0.01u
CD107
47u/16V
CD1
0.01

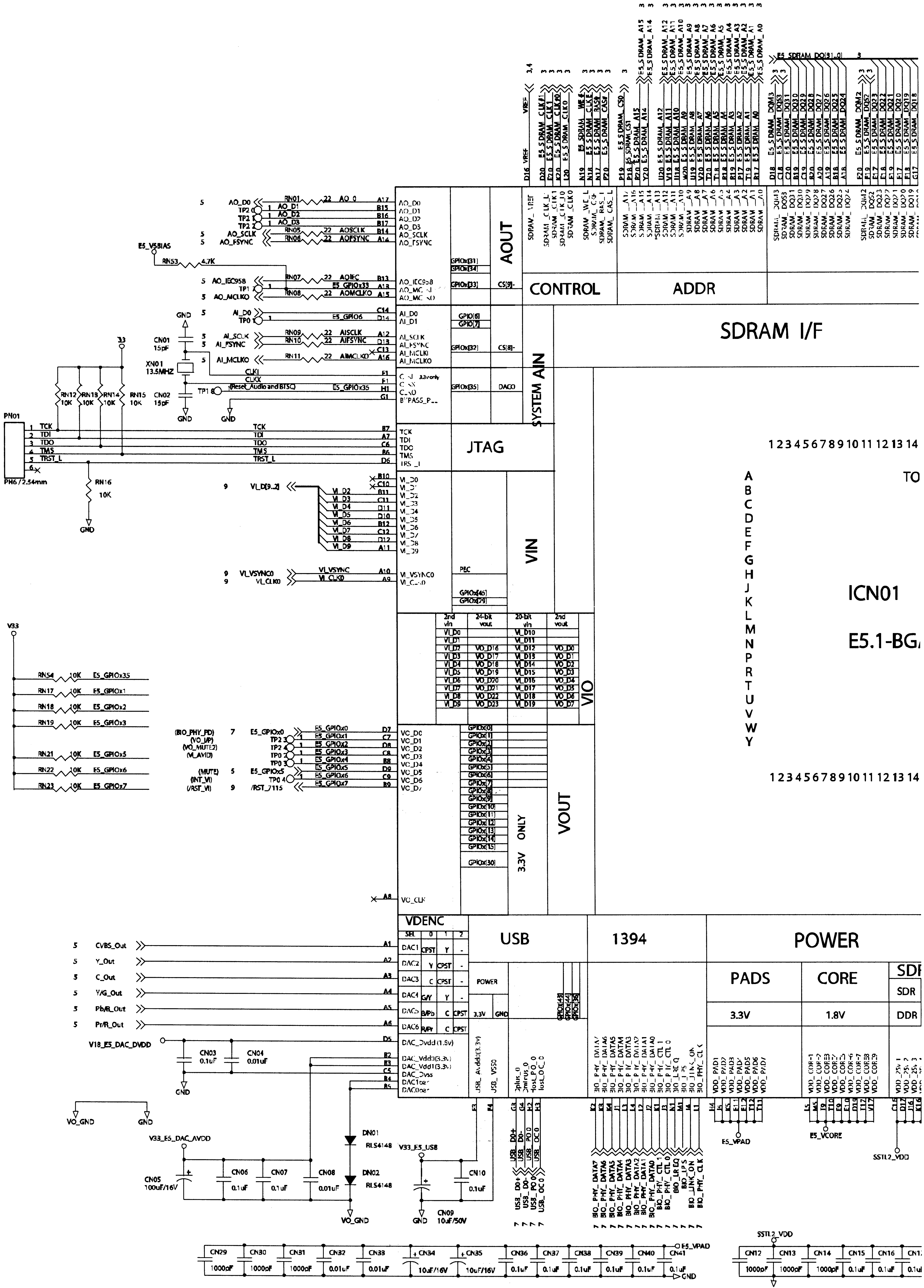

OFF5V
10uH
C032 0.01u
C031 47u/16V
IC103
LA73054
VCC
COMPOSITE_IN
SQUEEZE_SW
LETTER_BOX_SW
MUTE1_SW
CHROMA_IN
GND
Y1_IN
YC-MIX_SW
RGB_SW
Y2_IN
MUTE2_SW
LPF_SW
CB_IN
AMP2_SW
CR_IN
GND
REG
AMP1_SW
DRIVE1_SW
VCC
COMPOSITE_OUT
GND
CHROMA_OUT
C_DC_OUT
GND
Y1_OUT
GND
GND
Y2_OUT
VCC
CB_OUT
GND
CR_OUT
GND
DRIVE2_SW
To Sequence Control
P. 2 -12
PSCAN_H
CD101 0.1u
CD102 0.1u
CD103 0.1u
CD104 0.1u
CD105 0.1u
C025
47u/16V
OPAMP_VCC
R555 750(1/4W)
CD117 470u/10V
R560 75
SVIDEO(C)
Q102 A1266Y
R556 220
OPAMP_VCC
R554 750(1/4W)
CD118 470u/10V
R559 75
SVIDEO(Y)
Q101 A1266Y
R557 220
RGB_H(12V)
To HiFi Sound, IN/OUT
P. 2 -16
C612 0.01u
R115 750(1/4W)
C123 470u/10V
To HiFi Sound, IN/OUT
P. 2 -17
R114 75
COMPONENT(Y)
A1266Y Q103
RGB_H(12V)
R122 750(1/4W)
C138 470u/10V
R121 75
COMPONENT(PB)
A1266Y Q105
RGB_H(12V)
R119 750(1/4W)
C132 470u/10V
R118 75
COMPONENT(PR)
A1266Y Q104
RGB_H(12V)
R058 750(1/4W)
CD51 470u/10V
To HiFi Sound, IN/OUT
P. 2 -17
R059 75
G
A1266Y Q051
RGB_H(12V)
R058 750(1/4W)
CD52 470u/10V
R061 75
B
A1266Y Q052
RGB_H(12V)
R057 750(1/4W)
CD50 470u/10V
R060 75
R
A1266Y Q050
_VCC
ADC_DAC_VCC
47
IC101
PCM1802
AUDIO_IN_L
AUDIO_IN_R
VREF1
VREF2
VCC
AGND
PDWN
BYPASS
FSYNC
AI_LRCLK
MODE1
MODE0
FMT1
FMT0
OSR
AI_MCLK
VDD
DGND
AI_DATA
AI_SCLK
R427 33
R429 33
R501 33
R502 33
R503 33
R103 33
R234 33
R156 33
R425 33
R428 33
R427 33
48
ADC_3.3V
CD024 47u/16V
CD30 0.01u
CD110 0.01u
CD109 47u/16V
R446 100k
49
50
51
To HiFi Sound, IN/OUT
P. 2 -17
DAC#11
DVD_AUDIO_L
OPAMP_VCC
RD66 100k
CD124 22u/16V
RD01 33k
RD08 10K
CD126 470p
RD10 1.1k
RD12 1k
CD03 390p
RD11 1k
CD01 22u/16V
RD14 470
RD13 22k
Q003 C3198Y
ADC_DAC_VCC
RD17 470
Q004 A1266Y
RD16 470
RD18 1k
RD19 4.7k
Q005
RD22 470
IC_OPAMP IC002
-VCC
+VCC
52
OPAMP_VCC
RD25 100k
CD121 22u/16V
RD33 10k
RD34 11k
RD25 33k
CD123 470p
RD35 1.1k
CD04 390p
RD36 1k
CD02 22u/16V
OPAMP_VCC
CD127 47u/16V
CD128 0.01u
RD21 470
RD20 22k
Q006 C3198Y
DVD_AUDIO_R

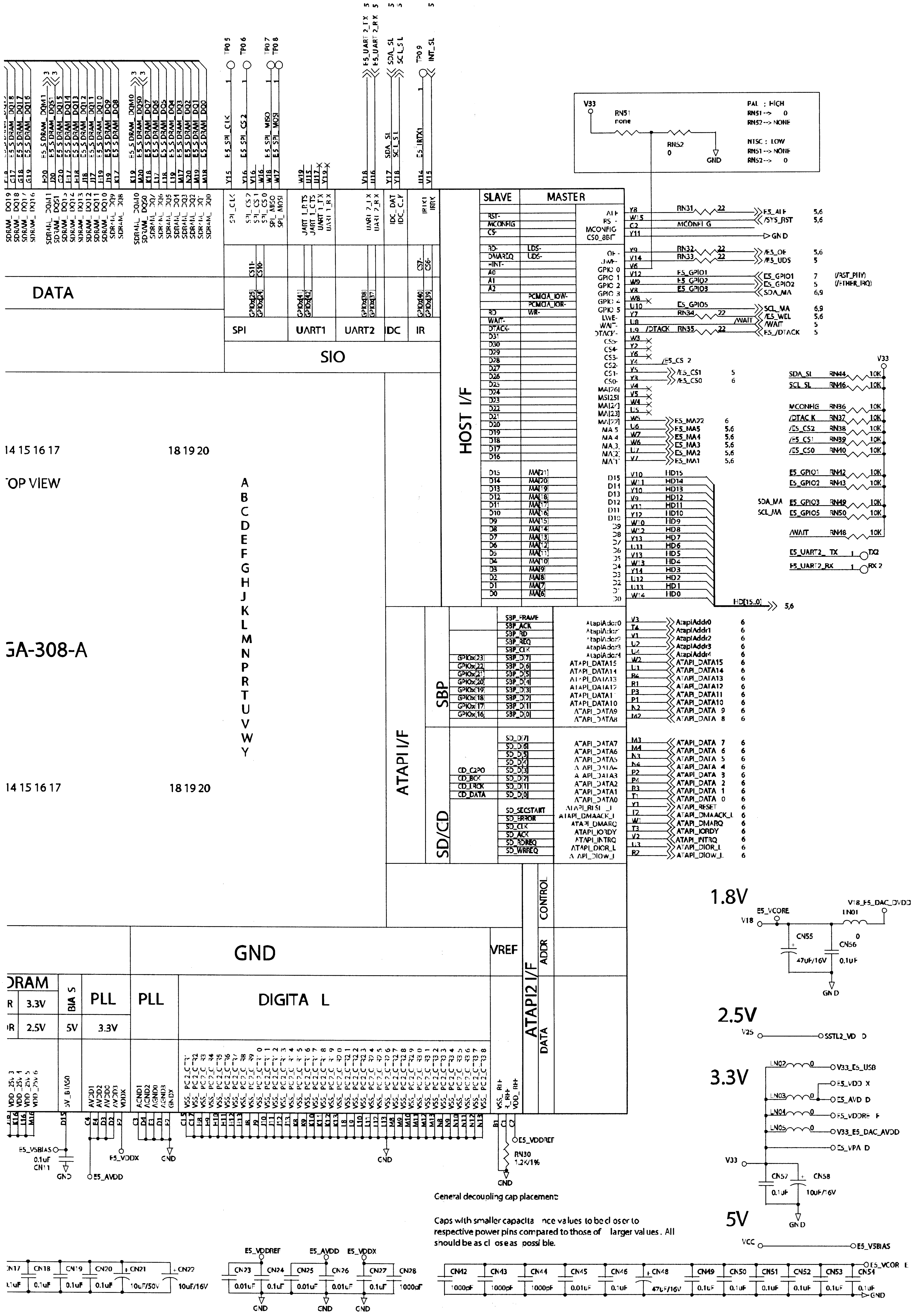
Chassisplatte / Chassis Board – Tuner, Frontend


RF101 TMI BLOCK
(MOD)
(IF) (TU)
ANT IN
ANT OUT
BB (5V)
A.IN
SDA
MB (5V)
SCL
V.IN
MD TU (32V)
RF AGC
S.V 1
S.V 2
ADRS
SCL
SDA
AFT
A.OUT
SIF
TU (32V)
IF OUT
V.OUT
C005 0.01u
C004 100u/10V
C012 0.01u
C013 47u/16V
R005 220
R006 220
C014 100p
L002 10u
To HiFi Sound, IN/OUT P. 2 16
IF AUDIO(R)
IF AUDIO(L)
To Sequence Control P. 2 13
BG/LL' (S.W 1)
L/L' (S.W 2)
AGC (NC.)
AFT
ON/OFF 5V(I)
S.CLK
S.DATA
NICAM RESET
22
35
34
25
2
7
8
C064 10u/16V
C065 10u/16V
C017(C) 8200p
C018(C) 8200p
C016 0.47u/50V
R052 750
R051 750
L052 100u
C062(C) 0.1u
C061 10u/16V
C063 1u/50V
R055(C) 5.6K
C059 3.3u/50V
C060(C) 0.1u
R056(C) 5.6K
C058(C) 0.1u
C057 10u/16V
C068 10u/16V
CAPL-M
AHVSS
AGNDC
VREF TOP
MONO IN
AVSS
AHVSUP
SCOUT(RX)
SCOUT(LX)
VREF1
DCAM(LX)
DCAM(RX)
VREF2
RESET Q
VSS
DVSUP
DATA
CLK
AVSUP
ANT+
ANT-
TESTEN
X-IN
X-OUT
ADR SEL
STNBY Q
IC051
MSP3417D-QG(NICAM)
R054 1K
X051 18.4MHz
L053 10u
L051 10u
C055 10u/16V
C056(C) 0.1u
C051(C) 39p
C054(C) 0.01u
C053(C) 2p
C052(C) 2p
C067(C) 0.1u
C066 10u/16V
C154 1u/50V
C153(C) 0.01u
C159(C) 0.01u
R154(C) 10K
C152 1u/50V
C151 47u/16V
R153(C) 5.6K
To Sequence Control P. 2 12
EVER 5V(III)
EVER 33V
GND
VDD1
RST H
CDLR
CTRL2
VOUT
SEPIN
SEPOUT
SEPC
SYNIN
VDD2
DAV
VCOR
VSS1
XtalIN
XtalOUT
CTRL1
-NC-
SDA
SCL
SYNC
HOUT
VSS2
CPOUT
VCOIN
To Video/Chroma Standard Sound P. 2 16
IF VIDEO
PDC VIDEO
2FSC
EVER 5V
L151 5.6uH
C161(C) 22p
C160 0.01u
IC151 LC74793
R152(C) 10K
R155(C) 2.7K
C158 4.7u/50V
C157(C) 0.056u
R147 15K

DVD-Platte – Prozessor / DVD Board – Processor

[2]


AOUT
CONTROL
ADDR
SDRAM I/F
SYSTEM AIN
JTAG
VIN
VIO
VOUT
3.3V ONLY
VDENC
USB
1394
POWER
PADS
CORE
3.3V
1.8V
SDR
DDR
ICN01
E5.1-BG
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H J K L M N P R T U V W Y
PN01
PH6/2.54mm
XN01
13.5MHZ
RN16 10K
DN01 RLS4148
DN02 RLS4148
CVBS_Out
Y_Out
C_Out
V/G_Out
Pb/B_Out
Pr/R_Out
V18_E5_DAC_DVDD
V33_E5_DAC_AVDD
V33_E5_USB
E5_VPAD
E5_VCORE
SSTL2_VDD
VO_GND
GND

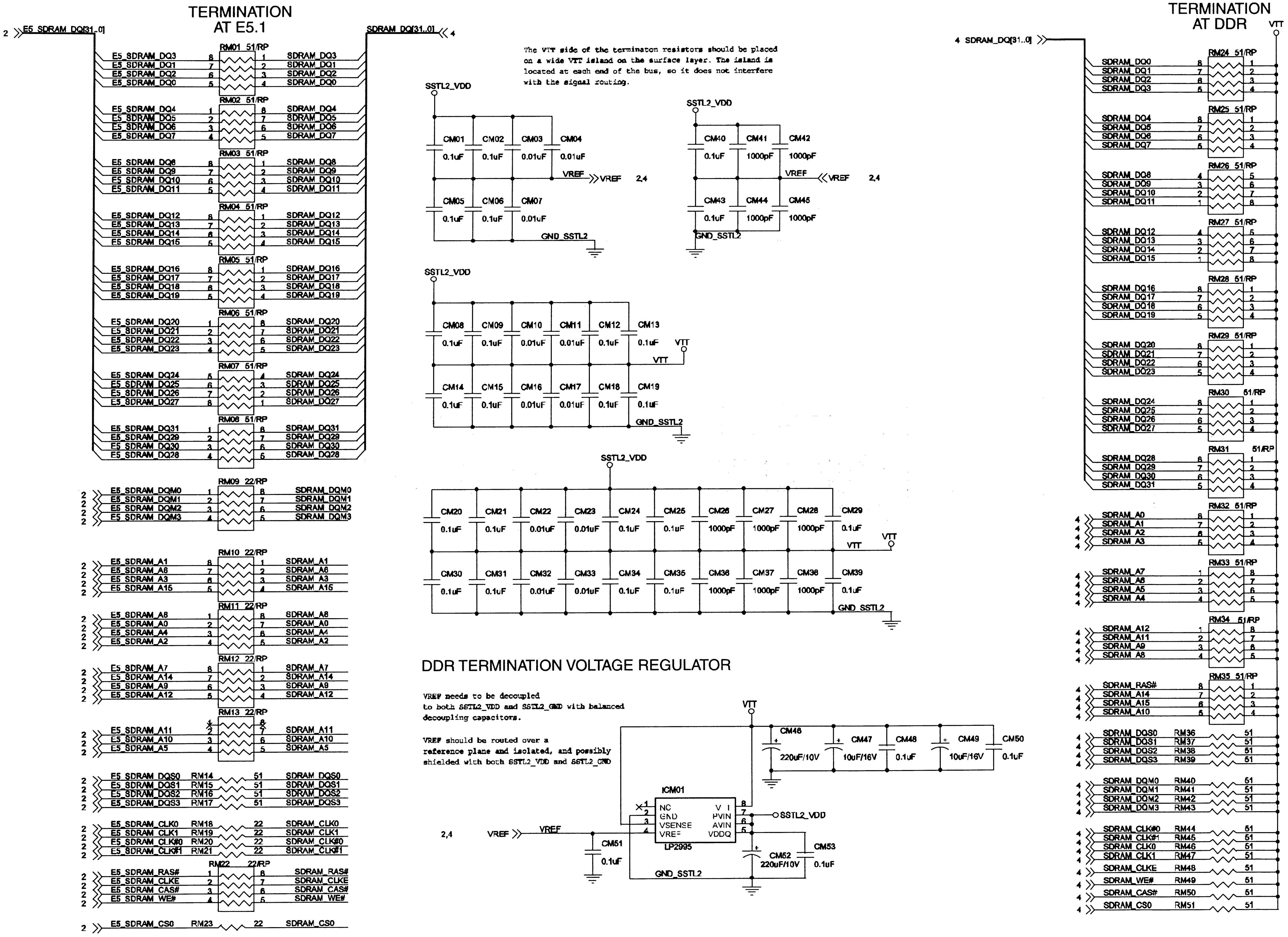

DATA
SPI
UART1
UART2
IDC
IR
SIO
SLAVE
MASTER
HOST I/F
14 15 16 17
18 19 20
TOP VIEW
A
B
C
D
E
F
G
H
J
K
L
M
N
P
R
T
U
V
W
Y
GA-308-A
ATAPI I/F
SBP
SD/CD
CONTROL
ADDR
ATAPI2 I/F
DATA
GND
VREF
DRAM
3.3V
2.5V
BIAS
5V
PLL
PLL
3.3V
DIGITA L
V33
RN51
none
RN52
0
GND
PAL : HIGH
RN51--> 0
RN52--> NONE
NTSC : LOW
RN51--> NONE
RN52--> 0
1.8V
E5_VCORE
V18
CN55
47uF/16V
CN56
0.1uF
LN01
V18_E5_DAC_DVDD
2.5V
V25
SSTL2_VDD
3.3V
LN02
V33_E5_USB
E5_VDDX
LN03
E5_AVDD
LN04
E5_VDDREF
LN05
V33_E5_DAC_AVDD
E5_VPAD
V33
CN57
0.1uF
CN58
10uF/16V
5V
VCC
E5_V5BIAS
E5_VCORE
GND
RN30
1.2K/1%
E5_VDDREF
E5_AVDD
E5_VDDX
E5_V5BIAS
0.1uF
CN11
E5_VDDX
E5_AVDD
HD[15..0]
TX2
RX2
5,6

General decoupling cap placement:

Caps with smaller capacitance values to be closer to respective power pins compared to those of larger values. All should be as close as possible.

DVD-Platte / DVD Board – Terminator

[3]


The VTT side of the terminaton resistors should be placed on a wide VTT island on the surface layer. The island is located at each end of the bus, so it does not interfere with the signal routing.

DDR TERMINATION VOLTAGE REGULATOR

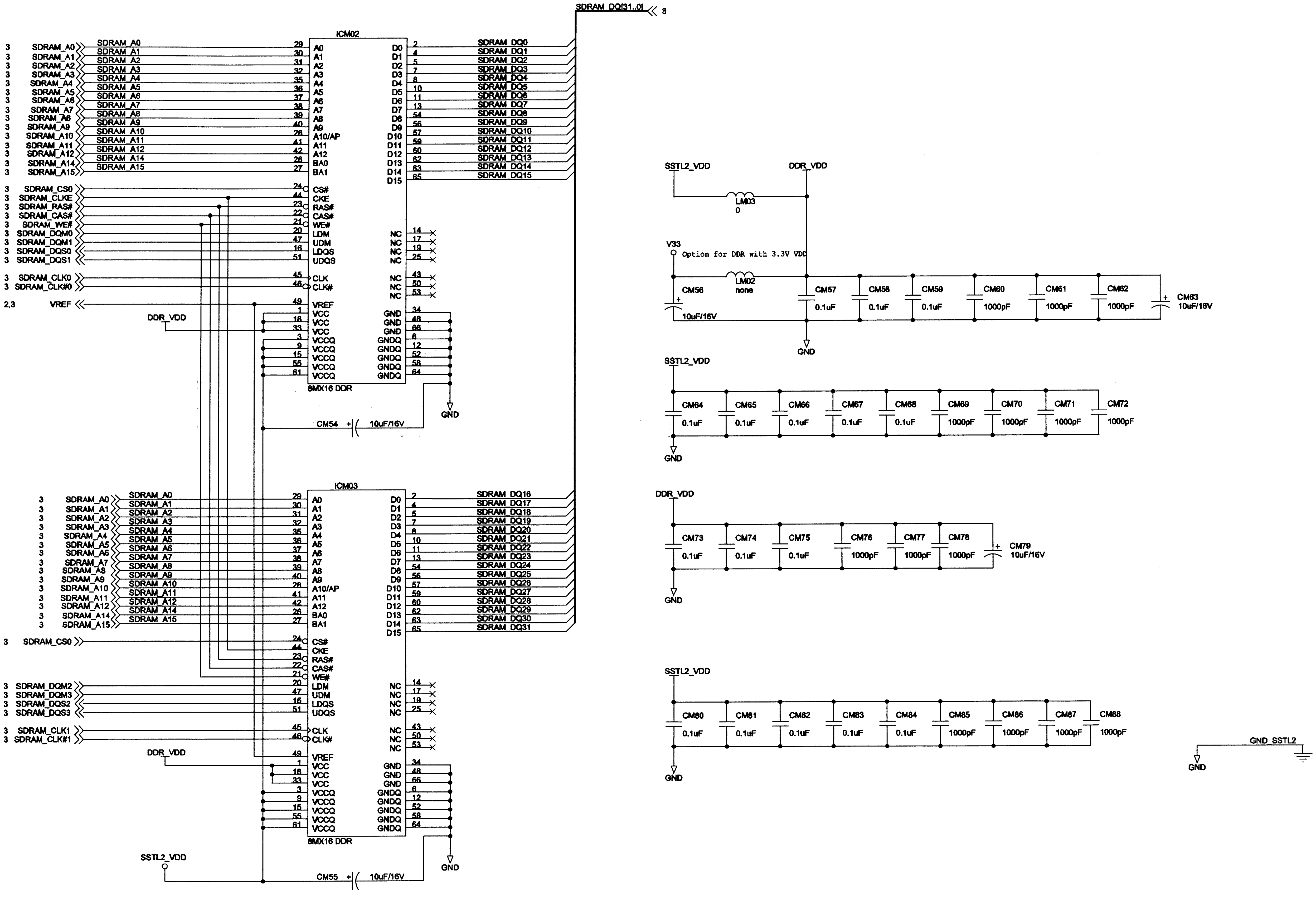
VREF needs to be decoupled to both SSTL2_VDD and SSTL2_GND with balanced decoupling capacitors.

VREF should be routed over a reference plane and isolated, and possibly shielded with both SSTL2_VDD and SSTL2_GND

TERMINATION AT E5.1
2 E5_SDRAM_DQ[31..0]
SDRAM_DQ[31..0] 4
RM01 51/RP
E5_SDRAM_DQ3
E5_SDRAM_DQ1
E5_SDRAM_DQ2
E5_SDRAM_DQ0
SDRAM_DQ3
SDRAM_DQ1
SDRAM_DQ2
SDRAM_DQ0
RM02 51/RP
E5_SDRAM_DQ4
E5_SDRAM_DQ5
E5_SDRAM_DQ6
E5_SDRAM_DQ7
SDRAM_DQ4
SDRAM_DQ5
SDRAM_DQ6
SDRAM_DQ7
RM03 51/RP
E5_SDRAM_DQ8
E5_SDRAM_DQ9
E5_SDRAM_DQ10
E5_SDRAM_DQ11
SDRAM_DQ8
SDRAM_DQ9
SDRAM_DQ10
SDRAM_DQ11
RM04 51/RP
E5_SDRAM_DQ12
E5_SDRAM_DQ13
E5_SDRAM_DQ14
E5_SDRAM_DQ15
SDRAM_DQ12
SDRAM_DQ13
SDRAM_DQ14
SDRAM_DQ15
RM05 51/RP
E5_SDRAM_DQ16
E5_SDRAM_DQ17
E5_SDRAM_DQ18
E5_SDRAM_DQ19
SDRAM_DQ16
SDRAM_DQ17
SDRAM_DQ18
SDRAM_DQ19
RM06 51/RP
E5_SDRAM_DQ20
E5_SDRAM_DQ21
E5_SDRAM_DQ22
E5_SDRAM_DQ23
SDRAM_DQ20
SDRAM_DQ21
SDRAM_DQ22
SDRAM_DQ23
RM07 51/RP
E5_SDRAM_DQ24
E5_SDRAM_DQ25
E5_SDRAM_DQ26
E5_SDRAM_DQ27
SDRAM_DQ24
SDRAM_DQ25
SDRAM_DQ26
SDRAM_DQ27
RM08 51/RP
E5_SDRAM_DQ31
E5_SDRAM_DQ29
E5_SDRAM_DQ30
E5_SDRAM_DQ28
SDRAM_DQ31
SDRAM_DQ29
SDRAM_DQ30
SDRAM_DQ28
RM09 22/RP
E5_SDRAM_DQM0
E5_SDRAM_DQM1
E5_SDRAM_DQM2
E5_SDRAM_DQM3
SDRAM_DQM0
SDRAM_DQM1
SDRAM_DQM2
SDRAM_DQM3
RM10 22/RP
E5_SDRAM_A1
E5_SDRAM_A6
E5_SDRAM_A3
E5_SDRAM_A15
SDRAM_A1
SDRAM_A6
SDRAM_A3
SDRAM_A15
RM11 22/RP
E5_SDRAM_A8
E5_SDRAM_A0
E5_SDRAM_A4
E5_SDRAM_A2
SDRAM_A8
SDRAM_A0
SDRAM_A4
SDRAM_A2
RM12 22/RP
E5_SDRAM_A7
E5_SDRAM_A14
E5_SDRAM_A9
E5_SDRAM_A12
SDRAM_A7
SDRAM_A14
SDRAM_A9
SDRAM_A12
RM13 22/RP
E5_SDRAM_A11
E5_SDRAM_A10
E5_SDRAM_A5
SDRAM_A11
SDRAM_A10
SDRAM_A5
E5_SDRAM_DQS0 RM14 51 SDRAM_DQS0
E5_SDRAM_DQS1 RM15 51 SDRAM_DQS1
E5_SDRAM_DQS2 RM16 51 SDRAM_DQS2
E5_SDRAM_DQS3 RM17 51 SDRAM_DQS3
E5_SDRAM_CLK0 RM18 22 SDRAM_CLK0
E5_SDRAM_CLK1 RM19 22 SDRAM_CLK1
E5_SDRAM_CLK#0 RM20 22 SDRAM_CLK#0
E5_SDRAM_CLK#1 RM21 22 SDRAM_CLK#1
RM22 22/RP
E5_SDRAM_RAS#
E5_SDRAM_CLKE
E5_SDRAM_CAS#
E5_SDRAM_WE#
SDRAM_RAS#
SDRAM_CLKE
SDRAM_CAS#
SDRAM_WE#
E5_SDRAM_CS0 RM23 22 SDRAM_CS0
SSTL2_VDD
CM01 0.1uF
CM02 0.1uF
CM03 0.01uF
CM04 0.01uF
VREF
VREF 2,4
CM05 0.1uF
CM06 0.1uF
CM07 0.01uF
GND_SSTL2
CM40 0.1uF
CM41 1000pF
CM42 1000pF
CM43 0.1uF
CM44 1000pF
CM45 1000pF
CM08 0.1uF
CM09 0.1uF
CM10 0.01uF
CM11 0.01uF
CM12 0.1uF
CM13 0.1uF
VTT
CM14 0.1uF
CM15 0.1uF
CM16 0.01uF
CM17 0.01uF
CM18 0.1uF
CM19 0.1uF
CM20 0.1uF
CM21 0.1uF
CM22 0.01uF
CM23 0.01uF
CM24 0.1uF
CM25 0.1uF
CM26 1000pF
CM27 1000pF
CM28 1000pF
CM29 0.1uF
CM30 0.1uF
CM31 0.1uF
CM32 0.01uF
CM33 0.01uF
CM34 0.1uF
CM35 0.1uF
CM36 1000pF
CM37 1000pF
CM38 1000pF
CM39 0.1uF
ICM01
LP2995
NC
GND
VSENSE
VREF
VI
PVIN
AVIN
VDDQ
CM46 220uF/10V
CM47 10uF/16V
CM48 0.1uF
CM49 10uF/16V
CM50 0.1uF
CM51 0.1uF
CM52 220uF/10V
CM53 0.1uF
SSTL2_VDD
TERMINATION AT DDR
4 SDRAM_DQ[31..0]
RM24 51/RP
SDRAM_DQ0
SDRAM_DQ1
SDRAM_DQ2
SDRAM_DQ3
RM25 51/RP
SDRAM_DQ4
SDRAM_DQ5
SDRAM_DQ6
SDRAM_DQ7
RM26 51/RP
SDRAM_DQ8
SDRAM_DQ9
SDRAM_DQ10
SDRAM_DQ11
RM27 51/RP
SDRAM_DQ12
SDRAM_DQ13
SDRAM_DQ14
SDRAM_DQ15
RM28 51/RP
SDRAM_DQ16
SDRAM_DQ17
SDRAM_DQ18
SDRAM_DQ19
RM29 51/RP
SDRAM_DQ20
SDRAM_DQ21
SDRAM_DQ22
SDRAM_DQ23
RM30 51/RP
SDRAM_DQ24
SDRAM_DQ25
SDRAM_DQ26
SDRAM_DQ27
RM31 51/RP
SDRAM_DQ28
SDRAM_DQ29
SDRAM_DQ30
SDRAM_DQ31
RM32 51/RP
SDRAM_A0
SDRAM_A1
SDRAM_A2
SDRAM_A3
RM33 51/RP
SDRAM_A7
SDRAM_A6
SDRAM_A5
SDRAM_A4
RM34 51/RP
SDRAM_A12
SDRAM_A11
SDRAM_A9
SDRAM_A8
RM35 51/RP
SDRAM_RAS#
SDRAM_A14
SDRAM_A15
SDRAM_A10
SDRAM_DQS0 RM36 51
SDRAM_DQS1 RM37 51
SDRAM_DQS2 RM38 51
SDRAM_DQS3 RM39 51
SDRAM_DQM0 RM40 51
SDRAM_DQM1 RM41 51
SDRAM_DQM2 RM42 51
SDRAM_DQM3 RM43 51
SDRAM_CLK#0 RM44 51
SDRAM_CLK#1 RM45 51
SDRAM_CLK0 RM46 51
SDRAM_CLK1 RM47 51
SDRAM_CLKE RM48 51
SDRAM_WE# RM49 51
SDRAM_CAS# RM50 51
SDRAM_CS0 RM51 51

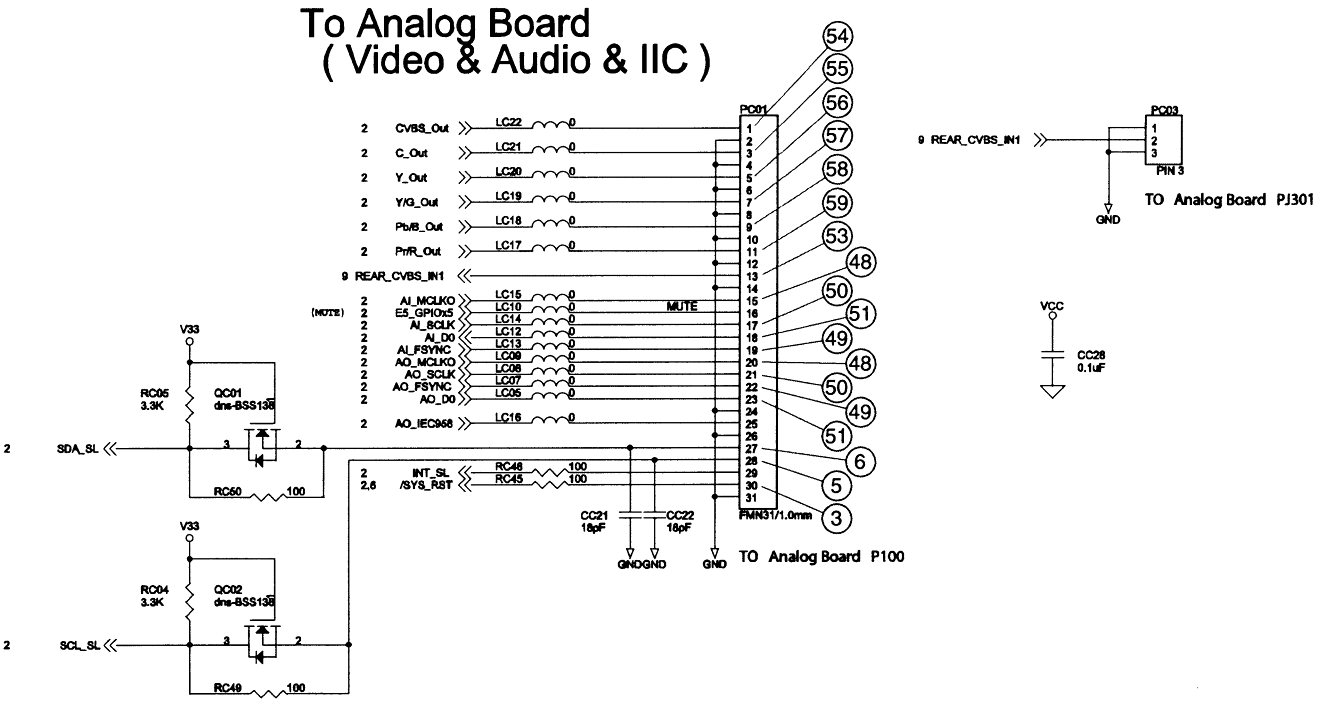
DVD-Platte / DVD Board – SDRAM

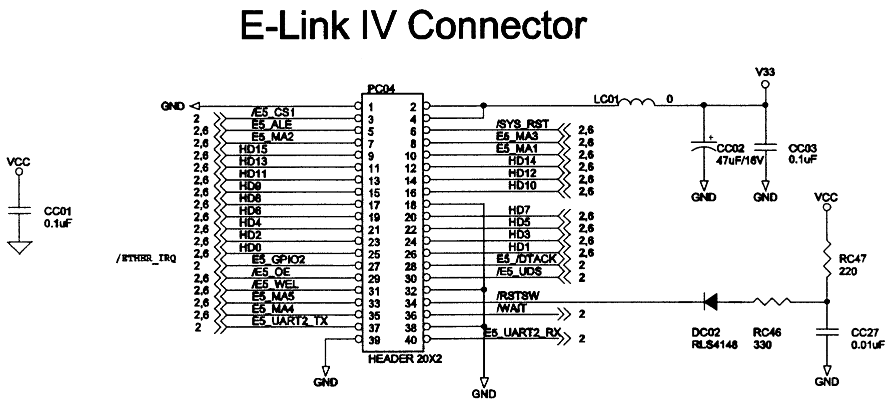
[4]


SDRAM_DQ[31..0]
ICM02
ICM03
8MX16 DDR
SDRAM_A0 … SDRAM_A15
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10/AP A11 A12 BA0 BA1
D0 … D15
SDRAM_DQ0 … SDRAM_DQ15
SDRAM_DQ16 … SDRAM_DQ31
CS# CKE RAS# CAS# WE# LDM UDM LDQS UDQS
CLK CLK#
VREF
VCC VCCQ GND GNDQ NC
SDRAM_CS0
SDRAM_CLKE
SDRAM_RAS#
SDRAM_CAS#
SDRAM_WE#
SDRAM_DQM0
SDRAM_DQM1
SDRAM_DQS0
SDRAM_DQS1
SDRAM_CLK0
SDRAM_CLK#0
SDRAM_DQM2
SDRAM_DQM3
SDRAM_DQS2
SDRAM_DQS3
SDRAM_CLK1
SDRAM_CLK#1
2,3 VREF
DDR_VDD
SSTL2_VDD
GND
CM54 10uF/16V
CM55 10uF/16V
LM03 0
V33
Option for DDR with 3.3V VDD
LM02 none
CM56 10uF/16V
CM57 0.1uF
CM58 0.1uF
CM59 0.1uF
CM60 1000pF
CM61 1000pF
CM62 1000pF
CM63 10uF/16V
CM64 0.1uF
CM65 0.1uF
CM66 0.1uF
CM67 0.1uF
CM68 0.1uF
CM69 1000pF
CM70 1000pF
CM71 1000pF
CM72 1000pF
CM73 0.1uF
CM74 0.1uF
CM75 0.1uF
CM76 1000pF
CM77 1000pF
CM78 1000pF
CM79 10uF/16V
CM80 0.1uF
CM81 0.1uF
CM82 0.1uF
CM83 0.1uF
CM84 0.1uF
CM85 1000pF
CM86 1000pF
CM87 1000pF
CM88 1000pF
GND_SSTL2

DVD-Platte / DVD Board – Interface

[5]

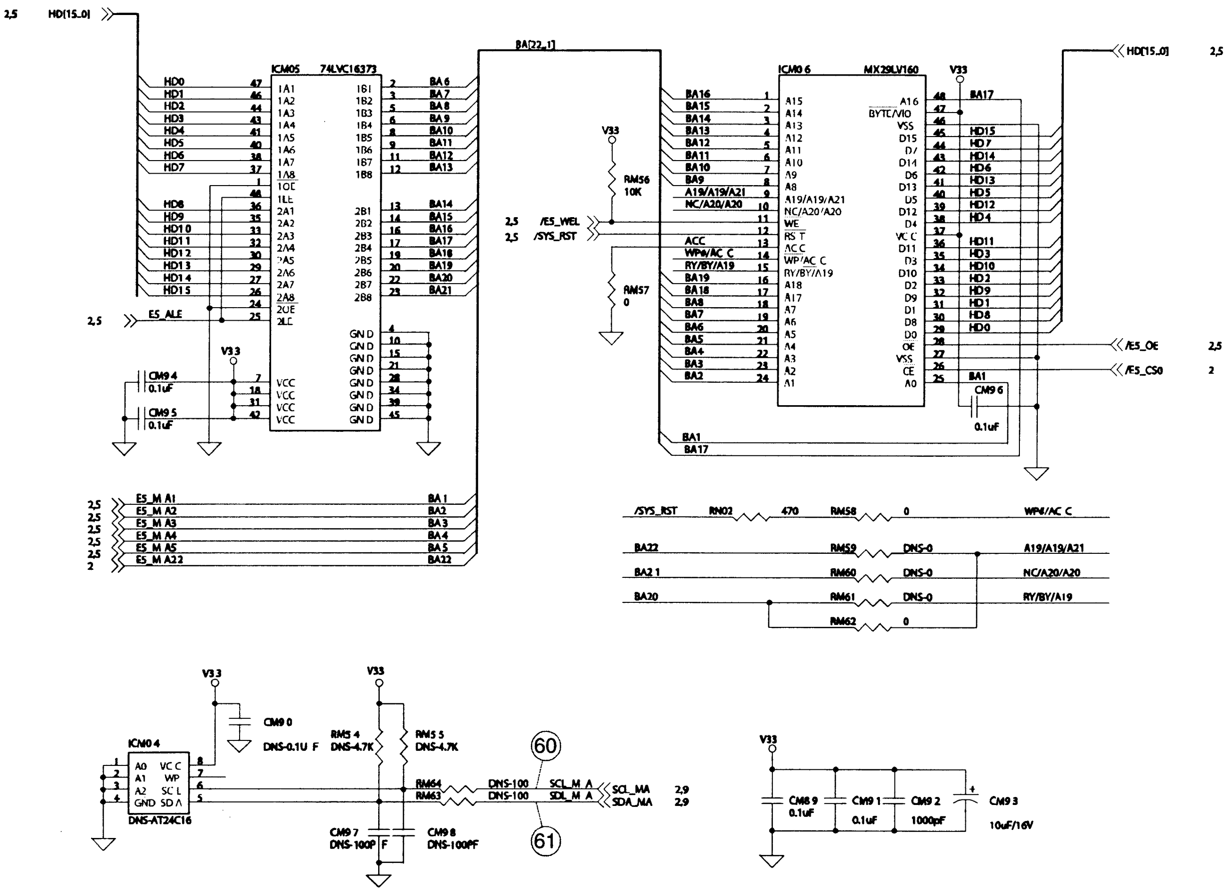

To Analog Board
(Video & Audio & IIC)
PC01
2 CVBS_Out LC22 0
2 C_Out LC21 0
2 Y_Out LC20 0
2 Y/G_Out LC19 0
2 Pb/B_Out LC18 0
2 Pr/R_Out LC17 0
9 REAR_CVBS_IN1
2 AI_MCLKO LC15 0
(MUTE) 2 E5_GPIOx5 LC10 0
MUTE
2 AI_SCLK LC14 0
2 AI_D0 LC12 0
2 AI_FSYNC LC13 0
2 AO_MCLKO LC09 0
2 AO_SCLK LC08 0
2 AO_FSYNC LC07 0
2 AO_D0 LC05 0
2 AO_IEC958 LC16 0
2 INT_SL RC46 100
2,6 /SYS_RST RC45 100
CC21 18pF
CC22 18pF
GND GND GND
FMN31/1.0mm
TO Analog Board P100
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
(54) (55) (56) (57) (58) (59) (53) (48) (50) (51) (49) (48) (50) (49) (51) ⑥ ⑤ ③
V33
RC05 3.3K
QC01 dns-BSS138
2 SDA_SL
3 2
RC50 100
V33
RC04 3.3K
QC02 dns-BSS138
2 SCL_SL
3 2
RC49 100
9 REAR_CVBS_IN1
PC03
1 2 3
PIN 3
GND
TO Analog Board PJ301
VCC
CC28 0.1uF


E-Link IV Connector
PC04
GND
2 /E5_CS1
2,6 E5_ALE
2,6 E5_MA2
2,6 HD15
2,6 HD13
2,6 HD11
2,6 HD9
2,6 HD8
2,6 HD6
2,6 HD4
2,6 HD2
2,6 HD0
/ETHER_IRQ 2,6 E5_GPIO2
2 /E5_OE
2,6 /E5_WEL
2,6 E5_MA5
2,6 E5_MA4
2,6 E5_UART2_TX
2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
HEADER 20X2
/SYS_RST 2,6
E5_MA3 2,6
E5_MA1 2,6
HD14 2,6
HD12 2,6
HD10 2,6
HD7 2,6
HD5 2,6
HD3 2,6
HD1 2,6
E5_/DTACK 2
/E5_UDS 2
/RSTSW
/WAIT 2
E5_UART2_RX 2
GND
GND
LC01 0
V33
CC02 47uF/16V
CC03 0.1uF
GND GND
VCC
RC47 220
DC02 RLS4148
RC46 330
CC27 0.01uF
GND
VCC
CC01 0.1uF

DVD-Platte / DVD Board – Flash, IDE Interface

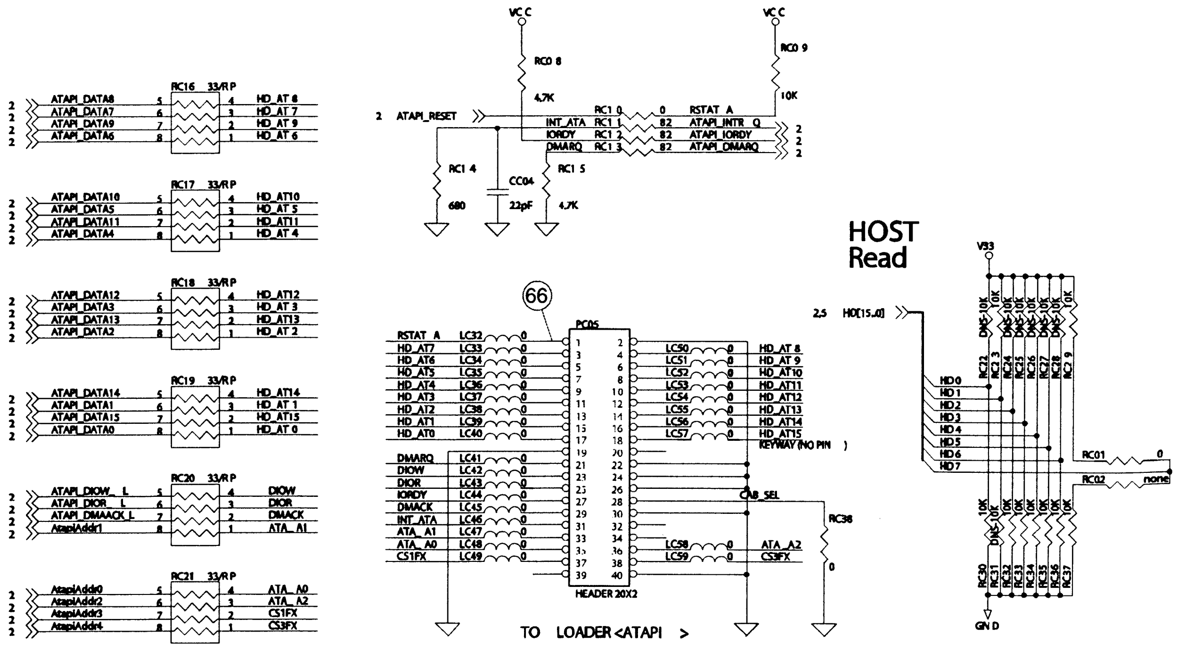
[6]

FLASH MEMORY(2 or 4 or 8 Mb)



HD[15..0]
BA[22..1]
ICM05 74LVC16373
ICM06 MX29LV160
V33
RM56 10K
RM57 0
/ES_WEL
/SYS_RST
ES_ALE
CM94 0.1uF
CM95 0.1uF
CM96 0.1uF
/ES_OE
/ES_CS0
ES_M A1
ES_M A2
ES_M A3
ES_M A4
ES_M A5
ES_M A22
RN02 470
RM58 0
WP#/AC C
RM59 DNS-0
A19/A19/A21
RM60 DNS-0
NC/A20/A20
RM61 DNS-0
RY/BY/A19
RM62 0
ICM04 DNS-AT24C16
CM90 DNS-0.1U F
RM54 DNS-4.7K
RM55 DNS-4.7K
RM64 DNS-100
RM63 DNS-100
SCL_M A
SDA_M A
SCL_MA
SDA_MA
CM97 DNS-100P F
CM98 DNS-100PF
60
61
CM89 0.1uF
CM91 0.1uF
CM92 1000pF
CM93 10uF/16V

DEDICATED ATAPI INTERFACE

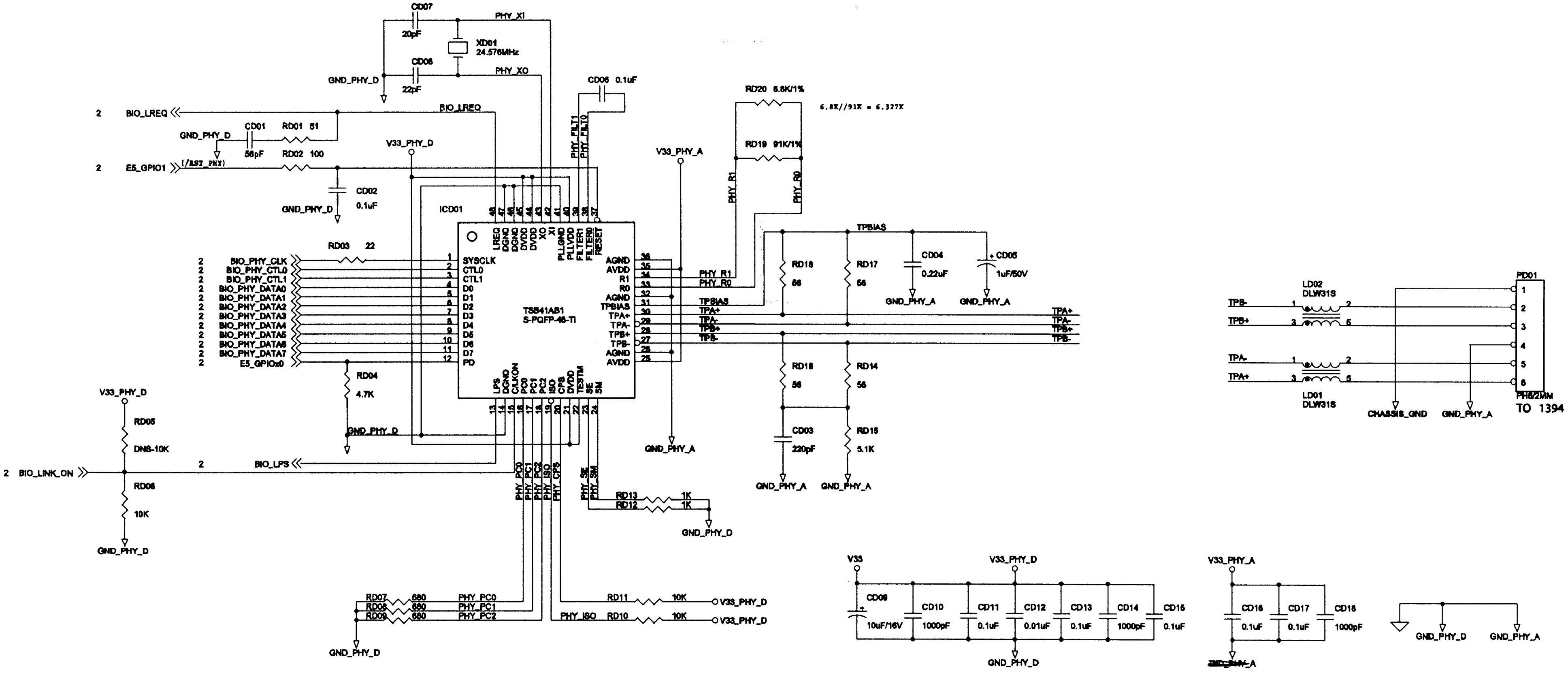


VCC
RC08 4.7K
RC09 10K
ATAPI_RESET
RC10 0 RSTAT A
RC11 82 ATAPI_INTR Q
RC12 82 ATAPI_IORDY
RC13 82 ATAPI_DMARQ
RC14 680
CC04 22pF
RC15 4.7K
RC16 33/RP
RC17 33/RP
RC18 33/RP
RC19 33/RP
RC20 33/RP
RC21 33/RP
66
PC05
HEADER 20X2
TO LOADER <ATAPI >
KEYWAY (NO PIN)
CAB_SEL
RC36 0
HOST Read
V33
HD[15..0]
RC01 0
RC02 none
GND

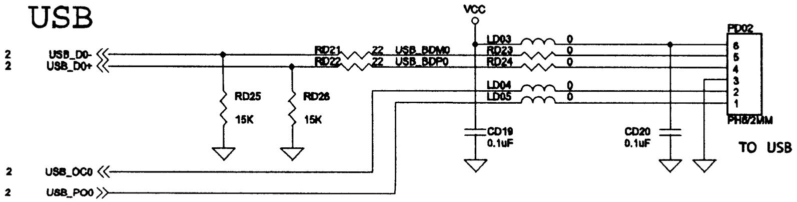
DVD-Platte / DVD Board – 1394 Firewire, USB

[7]

1394 FIREWIRE PHY

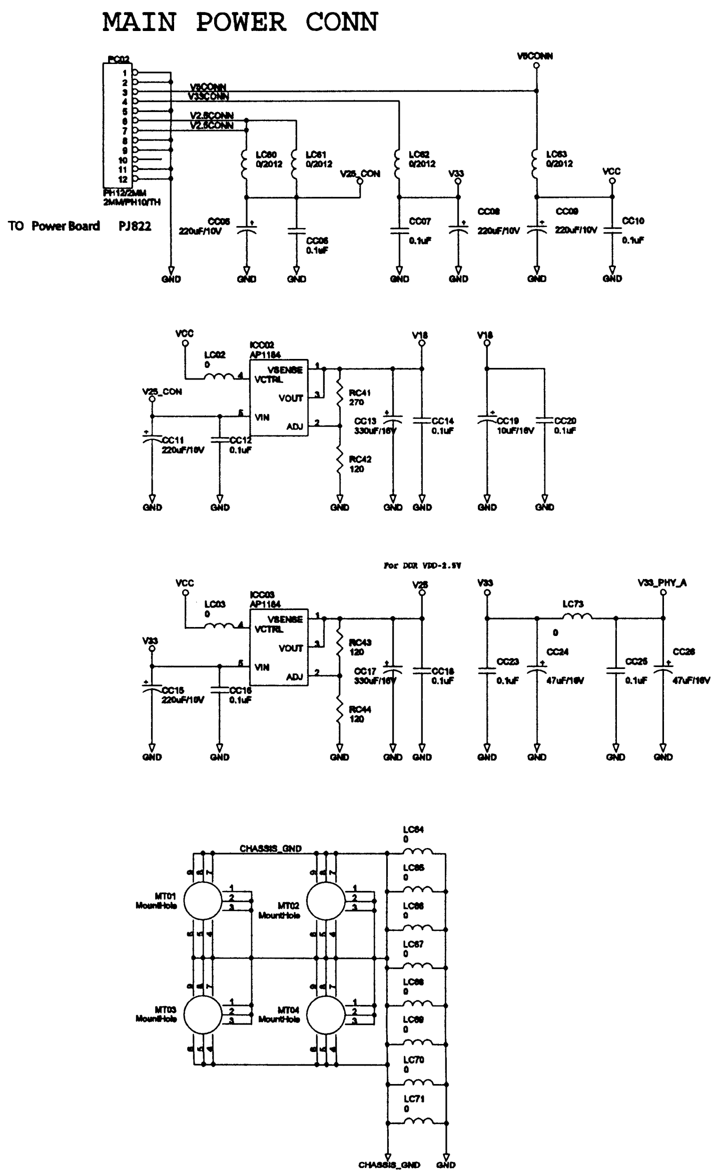

CD07 20pF
PHY_XI
XD01 24.576MHz
CD08 22pF
PHY_XO
GND_PHY_D
CD06 0.1uF
RD20 6.8K/1%
6.8K//91K = 6.327K
RD19 91K/1%
2 BIO_LREQ
BIO_LREQ
CD01 56pF
RD01 51
RD02 100
2 E5_GPIO1
(/RST_PHY)
V33_PHY_D
V33_PHY_A
CD02 0.1uF
ICD01
PHY_FILT1
PHY_FILT0
PHY_R1
PHY_R0
RD03 22
TSB41AB1
S-PQFP-48-TI
SYSCLK
CTL0
CTL1
D0
D1
D2
D3
D4
D5
D6
D7
PD
LREQ
DGND
DVDD
XO
XI
PLLGND
PLLVDD
FILTER1
FILTER0
RESET
AGND
AVDD
R1
R0
TPBIAS
TPA+
TPA-
TPB+
TPB-
LPS
CLKON
PC0
PC1
PC2
ISO
CPS
TESTM
SE
SM
2 BIO_PHY_CLK
2 BIO_PHY_CTL0
2 BIO_PHY_CTL1
2 BIO_PHY_DATA0
2 BIO_PHY_DATA1
2 BIO_PHY_DATA2
2 BIO_PHY_DATA3
2 BIO_PHY_DATA4
2 BIO_PHY_DATA5
2 BIO_PHY_DATA6
2 BIO_PHY_DATA7
2 E5_GPIOx0
RD04 4.7K
TPBIAS
CD04 0.22uF
CD05 1uF/50V
RD18 56
RD17 56
RD16 56
RD14 56
CD03 220pF
RD15 5.1K
GND_PHY_A
TPA+
TPA-
TPB+
TPB-
V33_PHY_D
RD05 DNS-10K
2 BIO_LINK_ON
2 BIO_LPS
RD06 10K
PHY_PC0
PHY_PC1
PHY_PC2
PHY_ISO
PHY_CPS
PHY_SE
PHY_SM
RD13 1K
RD12 1K
RD07 680
RD08 680
RD09 680
RD11 10K
RD10 10K
V33_PHY_D
LD02 DLW31S
LD01 DLW31S
PD01
PH6/2MM
TO 1394
CHASSIS_GND
V33
CD09 10uF/16V
CD10 1000pF
CD11 0.1uF
CD12 0.01uF
CD13 0.1uF
CD14 1000pF
CD15 0.1uF
V33_PHY_A
CD16 0.1uF
CD17 0.1uF
CD18 1000pF

USB


VCC
2 USB_D0-
2 USB_D0+
RD21 22 USB_BDM0
RD22 22 USB_BDP0
LD03 0
RD23 0
RD24 0
LD04 0
LD05 0
RD25 15K
RD26 15K
CD19 0.1uF
CD20 0.1uF
PD02
PH6/2MM
TO USB
2 USB_OC0
2 USB_PO0

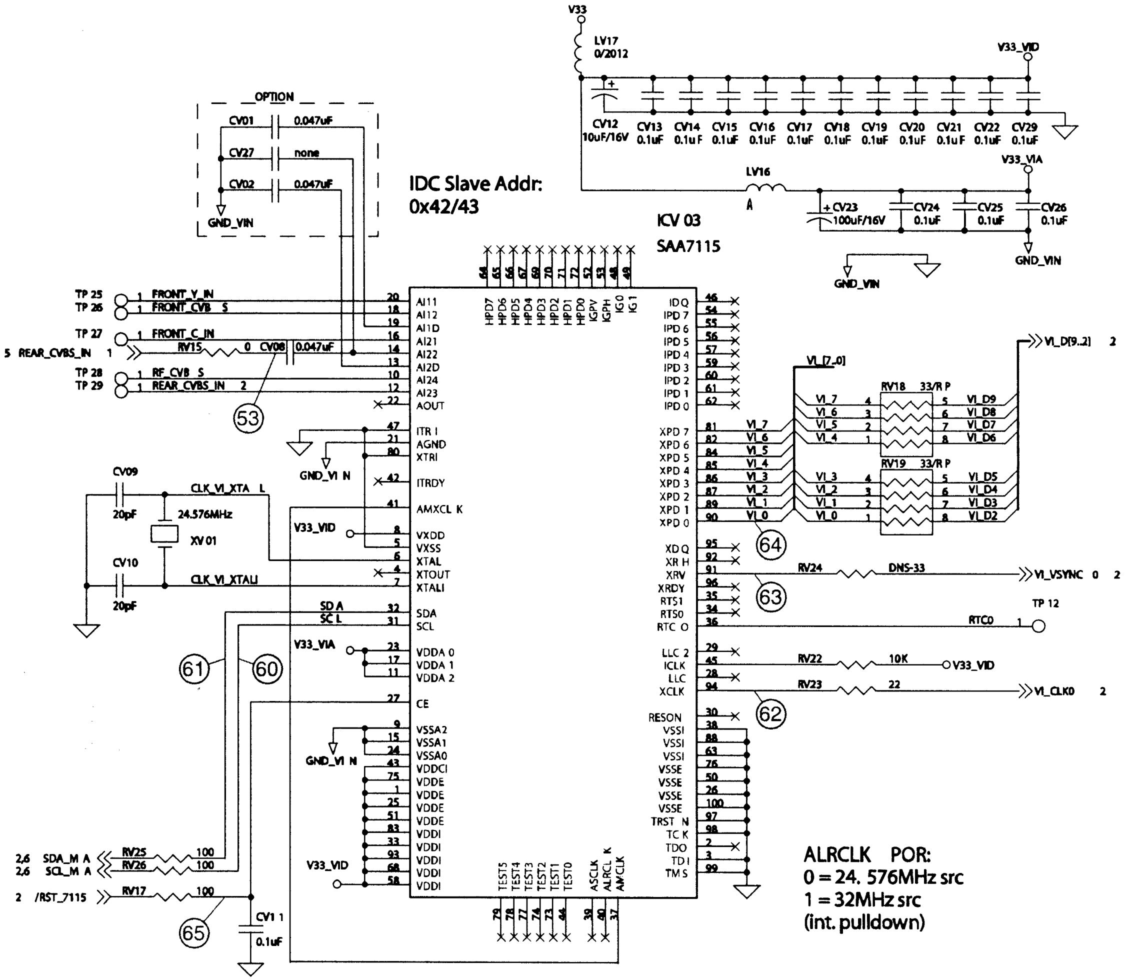
DVD-Platte – Netzteil / DVD Board – Power Supply

[8]


MAIN POWER CONN
PC02
PH12/2MM
2MM/PH10/TH
TO Power Board PJ822
V5CONN
V33CONN
V2.5CONN
V25_CON
LC60 0/2012
LC61 0/2012
LC62 0/2012
LC63 0/2012
CC05 220uF/10V
CC06 0.1uF
CC07 0.1uF
CC08 220uF/10V
CC09 220uF/10V
CC10 0.1uF
V33
VCC
GND
ICC02 AP1184
LC02 0
VSENSE
VCTRL
VOUT
VIN
ADJ
RC41 270
RC42 120
CC11 220uF/16V
CC12 0.1uF
CC13 330uF/16V
CC14 0.1uF
CC19 10uF/16V
CC20 0.1uF
V18
For DDR VDD-2.5V
ICC03 AP1184
LC03 0
RC43 120
RC44 120
CC15 220uF/16V
CC16 0.1uF
CC17 330uF/16V
CC18 0.1uF
V25
LC73 0
V33_PHY_A
CC23 0.1uF
CC24 47uF/16V
CC25 0.1uF
CC26 47uF/16V
CHASSIS_GND
MT01 MountHole
MT02 MountHole
MT03 MountHole
MT04 MountHole
LC64 0
LC65 0
LC66 0
LC67 0
LC68 0
LC69 0
LC70 0
LC71 0
CHASSIS_GND
GND

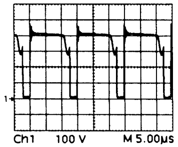
DVD-Platte / DVD Board – AD-Converter

[9]

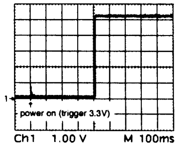

V33
LV17 0/2012
V33_VID
CV12 10uF/16V
CV13 0.1uF
CV14 0.1uF
CV15 0.1uF
CV16 0.1uF
CV17 0.1uF
CV18 0.1uF
CV19 0.1uF
CV20 0.1uF
CV21 0.1uF
CV22 0.1uF
CV29 0.1uF
V33_VIA
LV16
CV23 100uF/16V
CV24 0.1uF
CV25 0.1uF
CV26 0.1uF
GND_VIN
OPTION
CV01 0.047uF
CV27 none
CV02 0.047uF
IDC Slave Addr:
0x42/43
ICV 03
SAA7115
TP 25 FRONT_Y_IN
TP 26 FRONT_CVB S
TP 27 FRONT_C_IN
5 REAR_CVBS_IN 1
RV15 0 CV08 0.047uF
TP 28 RF_CVB S
TP 29 REAR_CVBS_IN 2
AI11
AI12
AI1D
AI21
AI22
AI2D
AI24
AI23
AOUT
ITR I
AGND
XTRI
ITRDY
AMXCL K
VXDD
VXSS
XTAL
XTOUT
XTALI
SDA
SCL
VDDA 0
VDDA 1
VDDA 2
CE
VSSA2
VSSA1
VSSA0
VDDCI
VDDE
VDDI
GND_VI N
CV09 20pF
CV10 20pF
24.576MHz
XV 01
CLK_VI_XTA L
CLK_VI_XTALI
V33_VID
V33_VIA
SD A
SC L
(53)
(60)
(61)
(62)
(63)
(64)
(65)
2,6 SDA_M A
2,6 SCL_M A
RV25 100
RV26 100
2 /RST_7115
RV17 100
CV1 1 0.1uF
HPD7
HPD6
HPD5
HPD4
HPD3
HPD2
HPD1
HPD0
IGPV
IGPH
IG0
IG1
IDQ
IPD 7
IPD 6
IPD 5
IPD 4
IPD 3
IPD 2
IPD 1
IPD 0
XPD 7
XPD 6
XPD 5
XPD 4
XPD 3
XPD 2
XPD 1
XPD 0
XD Q
XR H
XRV
XRDY
RTS1
RTS0
RTC O
LLC 2
ICLK
LLC
XCLK
RESON
VSSI
VSSE
TRST N
TC K
TDO
TD I
TM S
TEST5
TEST4
TEST3
TEST2
TEST1
TEST0
ASCLK
ALRCL K
AMCLK
VI_[7..0]
VI_7
VI_6
VI_5
VI_4
VI_3
VI_2
VI_1
VI_0
RV18 33/R P
RV19 33/R P
VI_D9
VI_D8
VI_D7
VI_D6
VI_D5
VI_D4
VI_D3
VI_D2
VI_D[9..2] 2
RV24 DNS-33
VI_VSYNC 0 2
TP 12
RTCO
RV22 10K
V33_VID
RV23 22
VI_CLKO 2

ALRCLK POR:
0 = 24. 576MHz src
1 = 32MHz src
(int. pulldown)

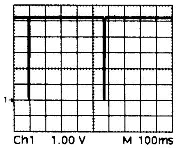
Oszillogramme / Oscillograms



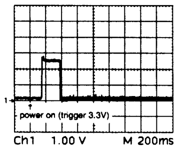
① Mode: VCR playback



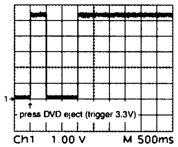
② Mode: power on



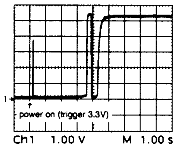
② Mode: EE without RF input



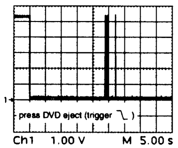
③ Mode: power on



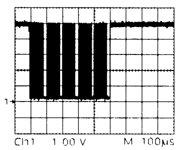
③ Mode: power on, standby



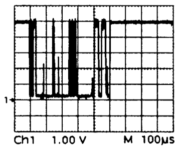
④ Mode: power on



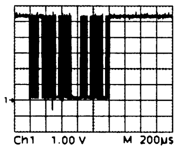
④ Mode: power on, standby



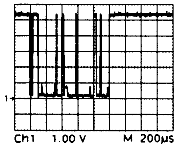
⑤ Mode: DVD playback



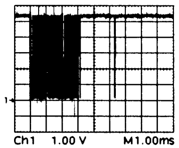
⑥ Mode: DVD playback



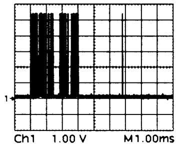
⑦ Mode: DVD playback



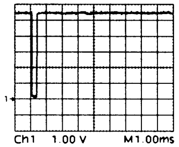
⑧ Mode: DVD playback



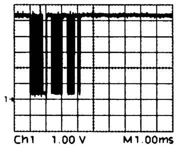
⑨ Mode: DVD playback



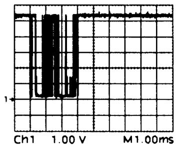
⑩ Mode: DVD playback



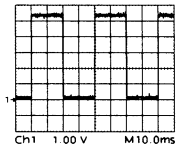
⑪ Mode: DVD playback



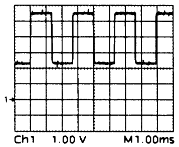
⑫ Mode: VCR playback



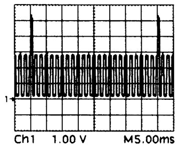
⑬ Mode: VCR playback



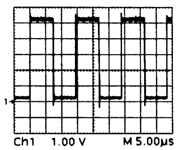
⑭ Mode: VCR record/playback



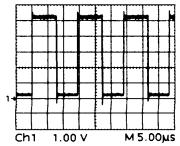
⑮ Mode: VCR record/playback



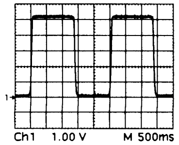
⑯ Mode: VCR record/playback



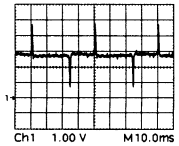
⑰ Mode: VCR record/playback



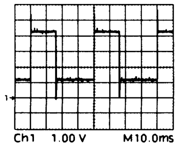
⑱ Mode: VCR record/playback



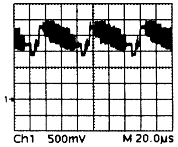
⑲ Mode: VCR record/playback



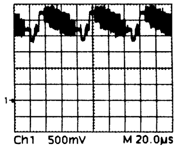
⑳ Mode: VCR playback



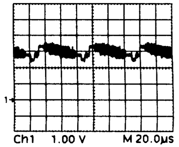
㉑ Mode: VCR record



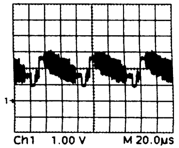
㉒ Mode: VCR record



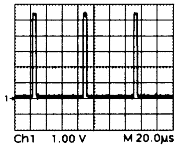
㉓ Mode: VCR record



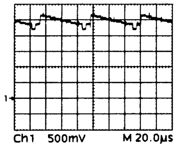
㉔ Mode: VCR record



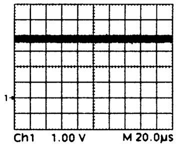
㉕ Mode: VCR record/playback



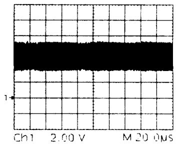
㉖ Mode: VCR record/playback



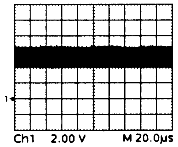
㉗ Mode: VCR record



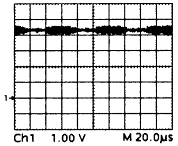
㉘ Mode: VCR record/playback



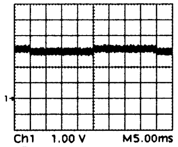
㉙ Mode: VCR record



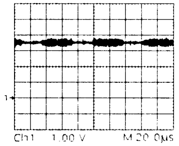
㉚ Mode: VCR record



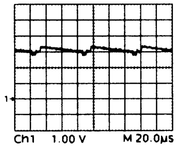
㉛ Mode: VCR record



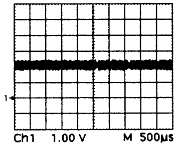
㉛ Mode: VCR playback



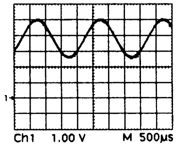
㉜ Mode: VCR playback



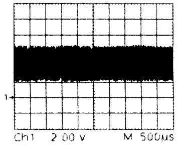
㉝ Mode: VCR playback



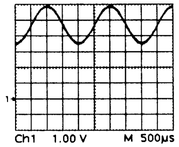
㉞ Mode: VCR record



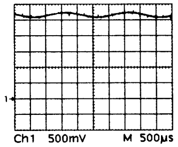
㉟ Mode: VCR record



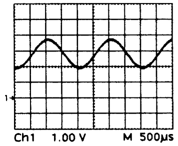
㊱ Mode: VCR record



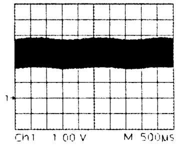
㊲ Mode: VCR record



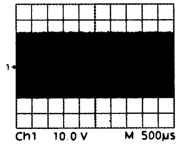
㊳ Mode: VCR record



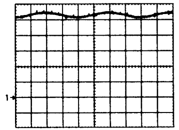
㊴ Mode: VCR record



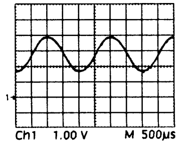
㊵ Mode: VCR record



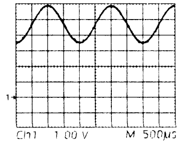
㊶ Mode: VCR record



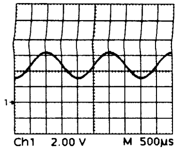
㊷ Mode: VCR playback



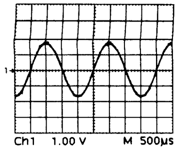
㊸ Mode: VCR playback



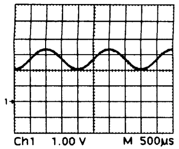
㊹ Mode: VCR playback



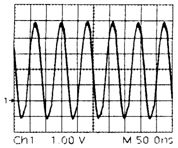
㊺ Mode: VCR playback



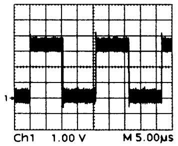
㊻ Mode: VCR playback



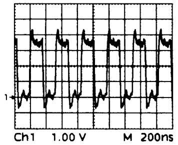
㊼ Mode: DVD record



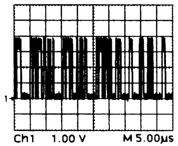
㊽ Mode: DVD record



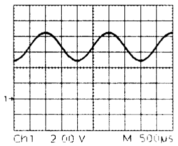
㊾ Mode: DVD record



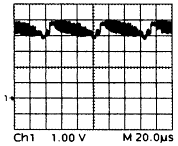
㊿ Mode: DVD record



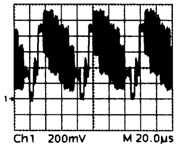
(51) Mode: DVD record



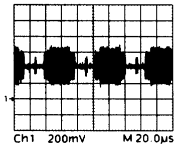
(52) Mode: DVD record



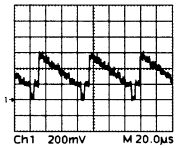
(53) Mode: DVD record



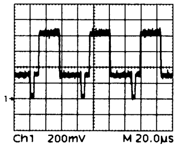
(54) Mode: DVD record



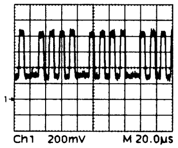
(55) Mode: DVD record



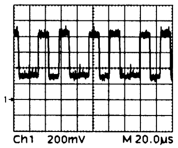
(56) Mode: DVD record



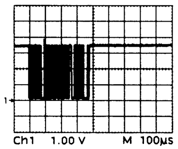
(57) Mode: DVD record



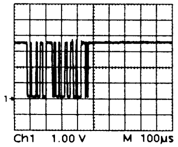
(58) Mode: DVD record



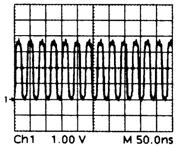
(59) Mode: DVD record



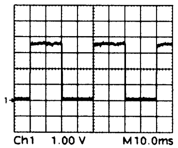
(60) Mode: DVD record



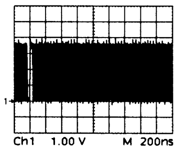
(61) Mode: DVD record



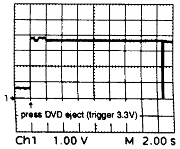
(62) Mode: DVD record



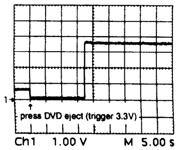
(63) Mode: DVD record



(64) Mode: DVD record



(65) Mode: power on, standby

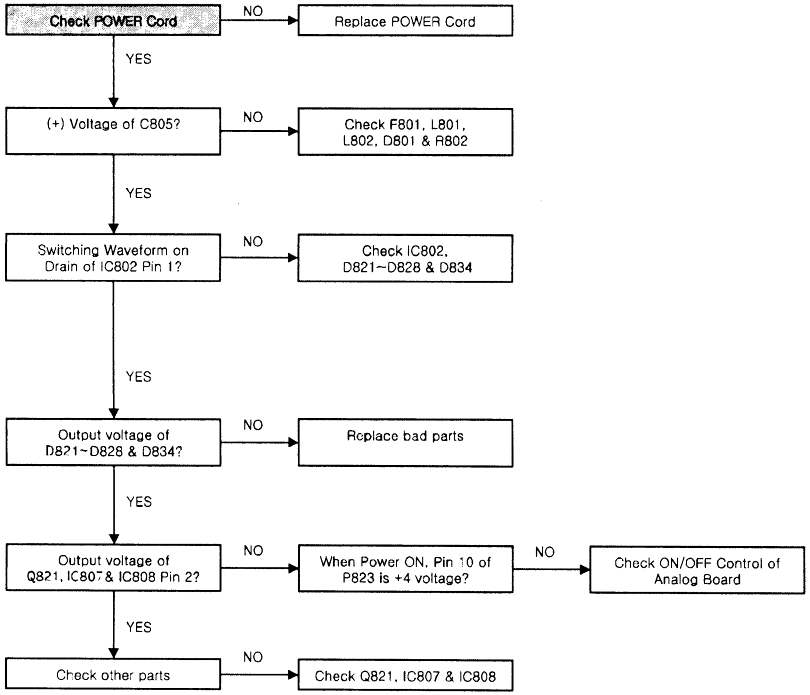


(66) Mode: power on, standby

Troubleshooting

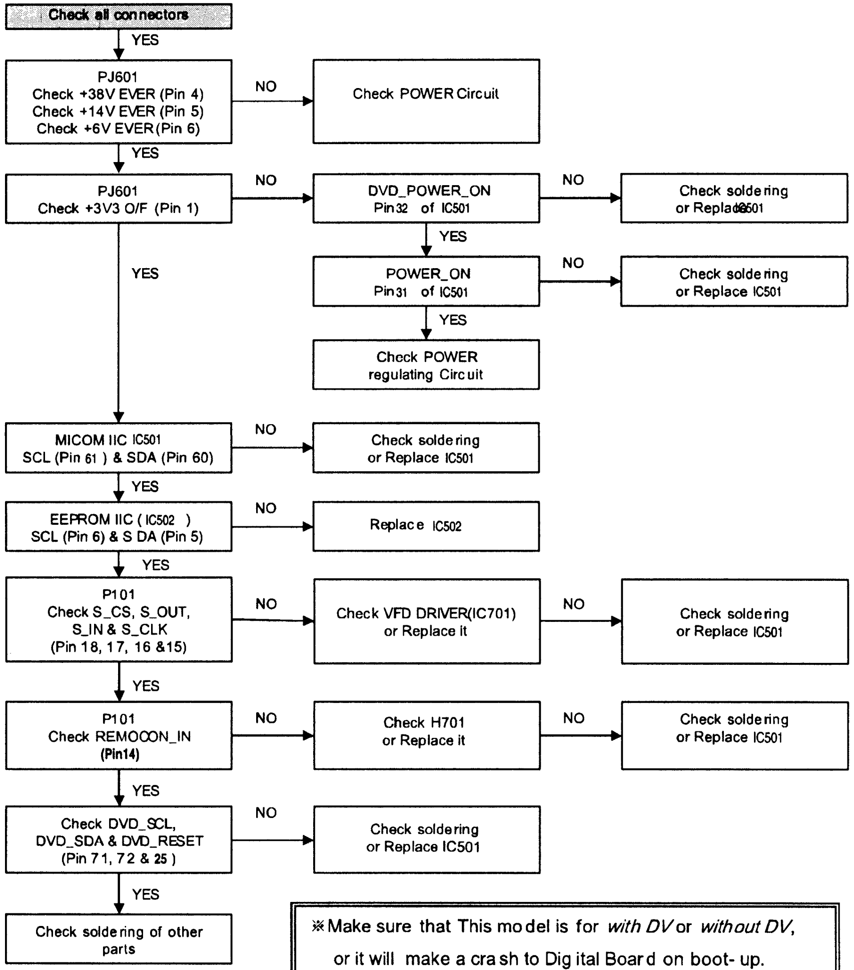
1. POWER CIRCUIT

1. No output voltage of Power Circuit


Check POWER Cord
NO
Replace POWER Cord
YES
(+) Voltage of C805?
NO
Check F801, L801, L802, D801 & R802
YES
Switching Waveform on Drain of IC802 Pin 1?
NO
Check IC802, D821~D828 & D834
YES
Output voltage of D821~D828 & D834?
NO
Replace bad parts
YES
Output voltage of Q821, IC807 & IC808 Pin 2?
NO
When Power ON, Pin 10 of P823 is +4 voltage?
NO
Check ON/OFF Control of Analog Board
YES
Check other parts
NO
Check Q821, IC807 & IC808

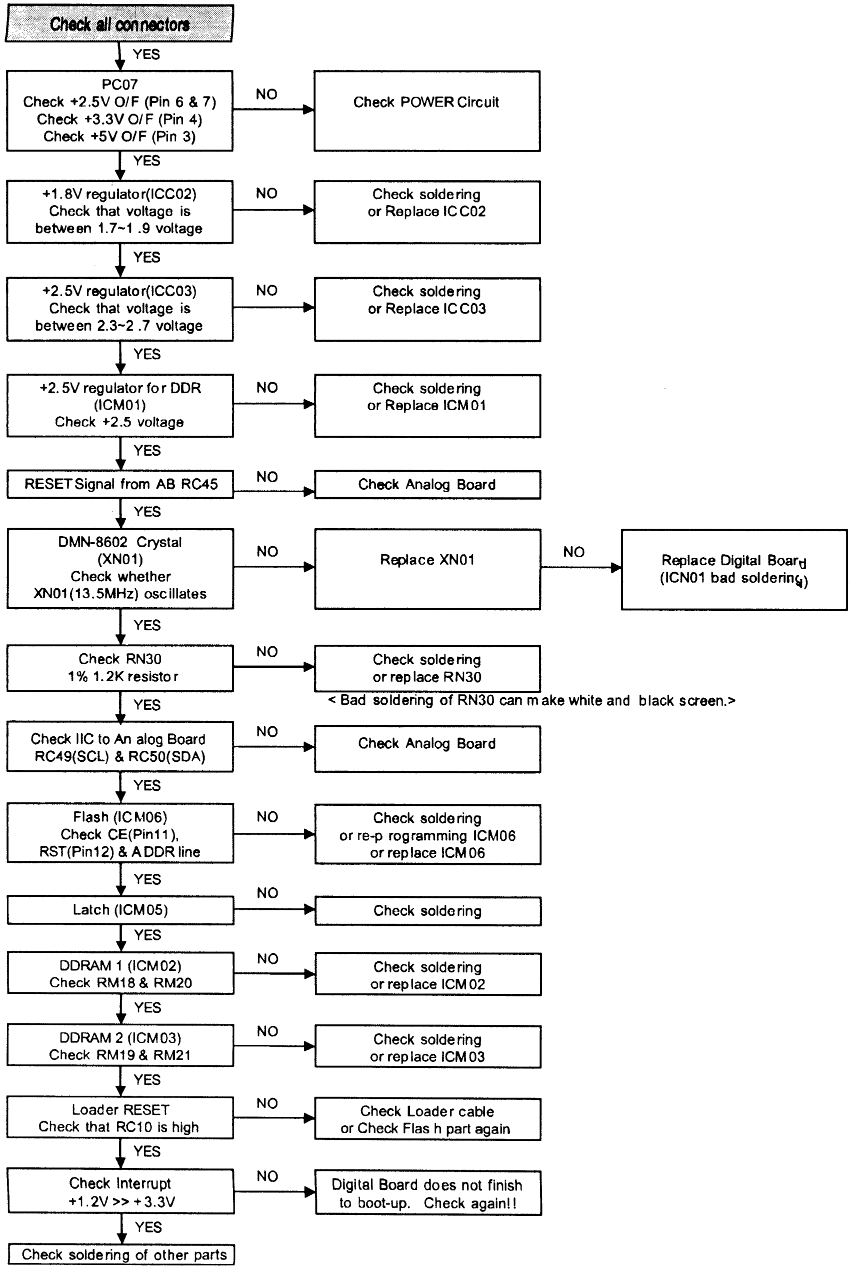
2. SYSTEM CIRCUIT

A. Analog Board

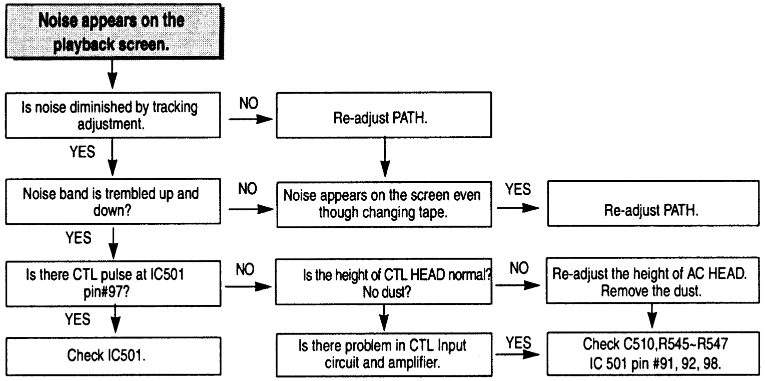

Check all connectors
YES
PJ601
Check +38V EVER (Pin 4)
Check +14V EVER (Pin 5)
Check +6V EVER (Pin 6)
NO
Check POWER Circuit
YES
PJ601
Check +3V3 O/F (Pin 1)
NO
DVD_POWER_ON
Pin32 of IC501
NO
Check soldering or Replace IC501
YES
POWER_ON
Pin31 of IC501
NO
Check soldering or Replace IC501
YES
Check POWER regulating Circuit
YES
MICOM IIC IC501
SCL (Pin 61) & SDA (Pin 60)
NO
Check soldering or Replace IC501
YES
EEPROM IIC (IC502)
SCL (Pin 6) & S DA (Pin 5)
NO
Replace IC502
YES
P101
Check S_CS, S_OUT, S_IN & S_CLK
(Pin 18, 17, 16 &15)
NO
Check VFD DRIVER(IC701) or Replace it
NO
Check soldering or Replace IC501
YES
P101
Check REMOCON_IN
(Pin14)
NO
Check H701 or Replace it
NO
Check soldering or Replace IC501
YES
Check DVD_SCL, DVD_SDA & DVD_RESET
(Pin 71, 72 & 25)
NO
Check soldering or Replace IC501
YES
Check soldering of other parts

※Make sure that This model is for *with DV* or *without DV*,
or it will make a crash to Digital Board on boot-up.
※ With DV : R642=0
Without DV : R643=0

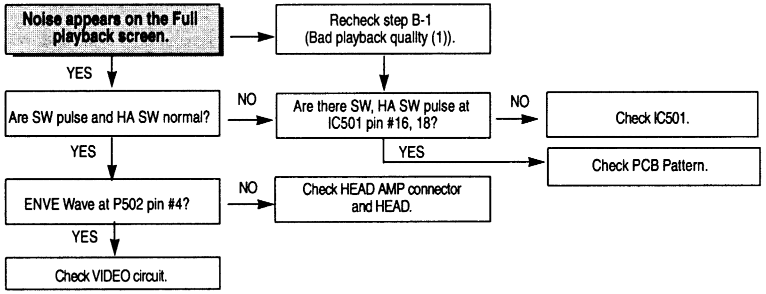
B. Digital Board


Check all connectors
YES
PC07
Check +2.5V O/F (Pin 6 & 7)
Check +3.3V O/F (Pin 4)
Check +5V O/F (Pin 3)
NO
Check POWER Circuit
YES
+1.8V regulator(ICC02)
Check that voltage is
between 1.7~1.9 voltage
NO
Check soldering
or Replace ICC02
YES
+2.5V regulator(ICC03)
Check that voltage is
between 2.3~2.7 voltage
NO
Check soldering
or Replace ICC03
YES
+2.5V regulator for DDR
(ICM01)
Check +2.5 voltage
NO
Check soldering
or Replace ICM01
YES
RESET Signal from AB RC45
NO
Check Analog Board
YES
DMN-8602 Crystal
(XN01)
Check whether
XN01(13.5MHz) oscillates
NO
Replace XN01
NO
Replace Digital Board
(ICN01 bad soldering)
YES
Check RN30
1% 1.2K resistor
NO
Check soldering
or replace RN30
< Bad soldering of RN30 can make white and black screen.>
YES
Check IIC to Analog Board
RC49(SCL) & RC50(SDA)
NO
Check Analog Board
YES
Flash (ICM06)
Check CE(Pin11),
RST(Pin12) & ADDR line
NO
Check soldering
or re-programming ICM06
or replace ICM06
YES
Latch (ICM05)
NO
Check soldoring
YES
DDRAM 1 (ICM02)
Check RM18 & RM20
NO
Check soldering
or replace ICM02
YES
DDRAM 2 (ICM03)
Check RM19 & RM21
NO
Check soldering
or replace ICM03
YES
Loader RESET
Check that RC10 is high
NO
Check Loader cable
or Check Flash part again
YES
Check Interrupt
+1.2V >> +3.3V
NO
Digital Board does not finish
to boot-up. Check again!!
YES
Check soldering of other parts

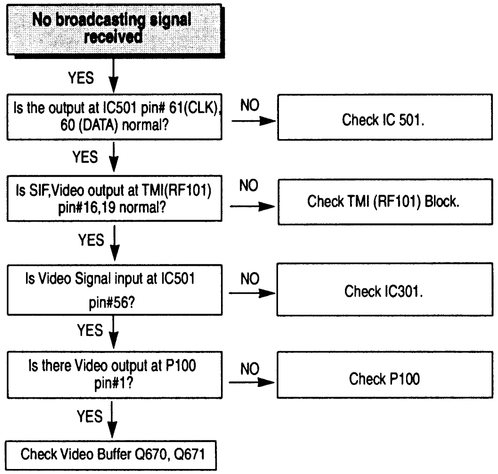
C-1. Bad playback quality (1)


Noise appears on the playback screen.
Is noise diminished by tracking adjustment.
NO
Re-adjust PATH.
YES
Noise band is trembled up and down?
NO
Noise appears on the screen even though changing tape.
YES
Re-adjust PATH.
YES
Is there CTL pulse at IC501 pin#97?
NO
Is the height of CTL HEAD normal? No dust?
NO
Re-adjust the height of AC HEAD. Remove the dust.
YES
Check IC501.
Is there problem in CTL Input circuit and amplifier.
YES
Check C510,R545~R547 IC 501 pin #91, 92, 98.

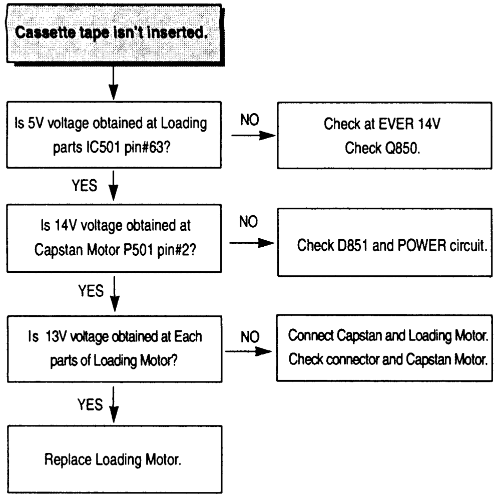
C-2. Bad playback quality (2)


Noise appears on the Full playback screen.
Recheck step B-1 (Bad playback quality (1)).
YES
Are SW pulse and HA SW normal?
NO
Are there SW, HA SW pulse at IC501 pin #16, 18?
NO
Check IC501.
YES
Check PCB Pattern.
YES
ENVE Wave at P502 pin #4?
NO
Check HEAD AMP connector and HEAD.
YES
Check VIDEO circuit.

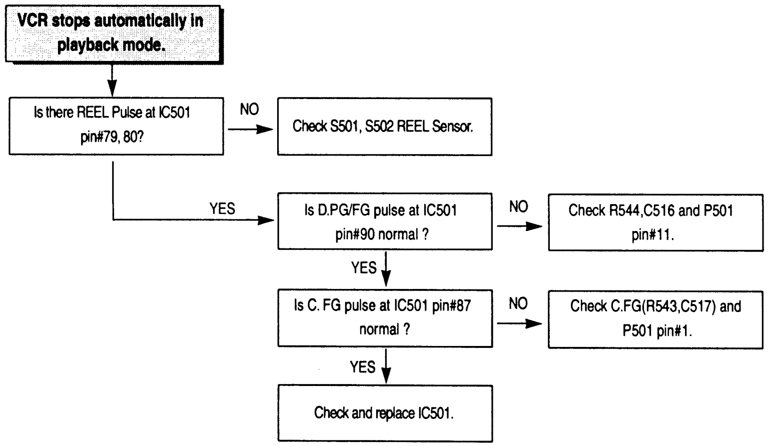
D. No broadcasting signal received


No broadcasting signal received
YES
Is the output at IC501 pin# 61(CLK), 60 (DATA) normal?
NO
Check IC 501.
YES
Is SIF,Video output at TMI(RF101) pin#16,19 normal?
NO
Check TMI (RF101) Block.
YES
Is Video Signal input at IC501 pin#56?
NO
Check IC301.
YES
Is there Video output at P100 pin#1?
NO
Check P100
YES
Check Video Buffer Q670, Q671

E. No CASSETTE Loading

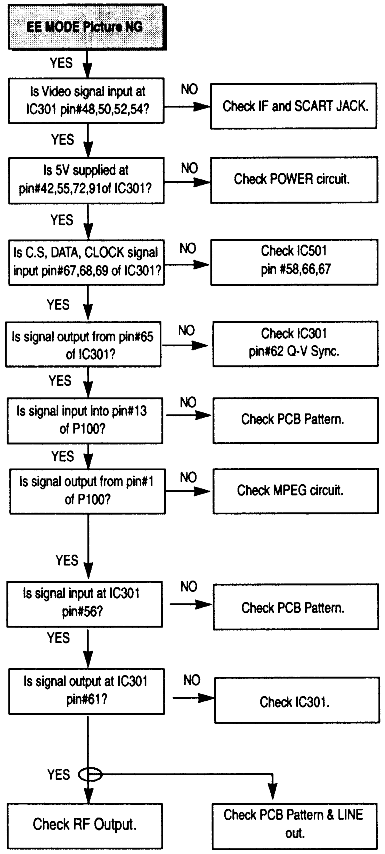

Cassette tape isn't inserted.
Is 5V voltage obtained at Loading parts IC501 pin#63?
NO
Check at EVER 14V Check Q850.
YES
Is 14V voltage obtained at Capstan Motor P501 pin#2?
NO
Check D851 and POWER circuit.
YES
Is 13V voltage obtained at Each parts of Loading Motor?
NO
Connect Capstan and Loading Motor. Check connector and Capstan Motor.
YES
Replace Loading Motor.

F. AUTO STOP in Playback mode

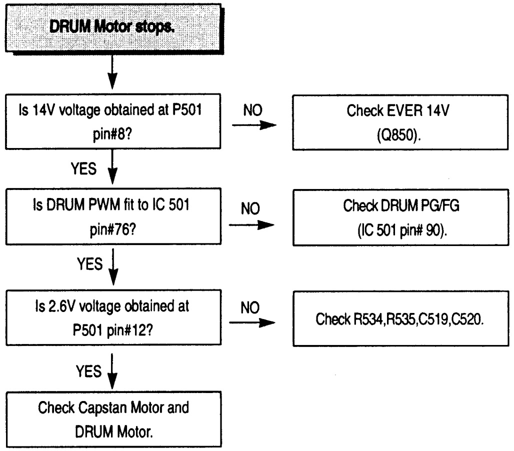

VCR stops automatically in playback mode.
Is there REEL Pulse at IC501 pin#79, 80?
NO
Check S501, S502 REEL Sensor.
YES
Is D.PG/FG pulse at IC501 pin#90 normal ?
NO
Check R544,C516 and P501 pin#11.
YES
Is C. FG pulse at IC501 pin#87 normal ?
NO
Check C.FG(R543,C517) and P501 pin#1.
YES
Check and replace IC501.

3. VIDEO circuit

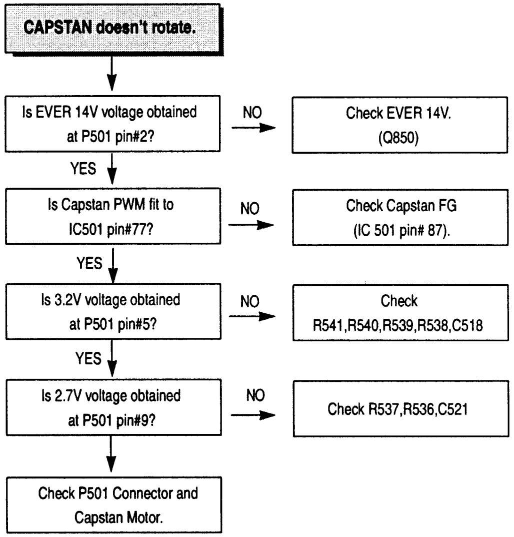
A. EE screen doesn't appear


EE MODE Picture NG
YES
Is Video signal input at IC301 pin#48,50,52,54?
NO
Check IF and SCART JACK.
YES
Is 5V supplied at pin#42,55,72,91of IC301?
NO
Check POWER circuit.
YES
Is C.S, DATA, CLOCK signal input pin#67,68,69 of IC301?
NO
Check IC501 pin #58,66,67
YES
Is signal output from pin#65 of IC301?
NO
Check IC301 pin#62 Q-V Sync.
YES
Is signal input into pin#13 of P100?
NO
Check PCB Pattern.
YES
Is signal output from pin#1 of P100?
NO
Check MPEG circuit.
YES
Is signal input at IC301 pin#56?
NO
Check PCB Pattern.
YES
Is signal output at IC301 pin#61?
NO
Check IC301.
YES
Check RF Output.
Check PCB Pattern & LINE out.

G. DRUM Motor stops

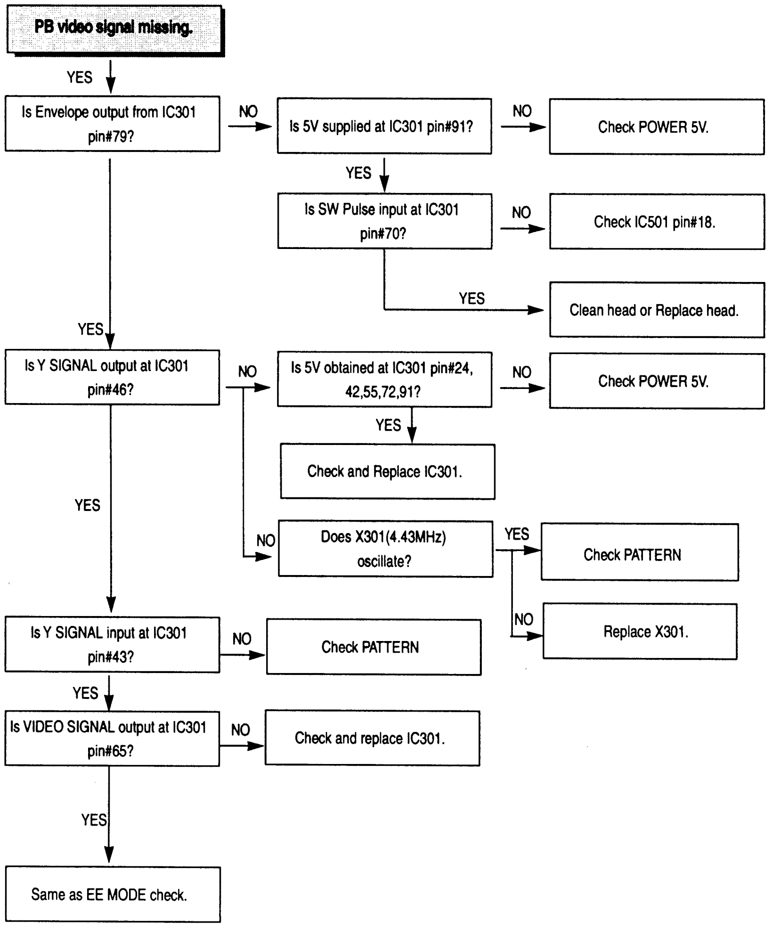

DRUM Motor stops.
Is 14V voltage obtained at P501 pin#8?
NO
Check EVER 14V (Q850).
YES
Is DRUM PWM fit to IC 501 pin#76?
NO
Check DRUM PG/FG (IC 501 pin# 90).
YES
Is 2.6V voltage obtained at P501 pin#12?
NO
Check R534,R535,C519,C520.
YES
Check Capstan Motor and DRUM Motor.

H. CAPSTAN doesn't rotate

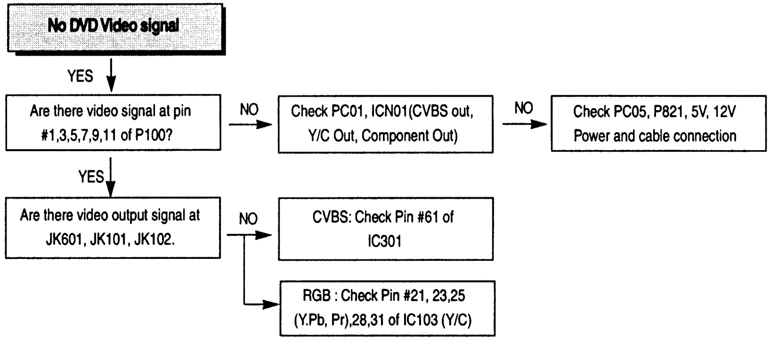

CAPSTAN doesn't rotate.
Is EVER 14V voltage obtained at P501 pin#2?
NO
Check EVER 14V. (Q850)
YES
Is Capstan PWM fit to IC501 pin#77?
NO
Check Capstan FG (IC 501 pin# 87).
YES
Is 3.2V voltage obtained at P501 pin#5?
NO
Check R541,R540,R539,R538,C518
YES
Is 2.7V voltage obtained at P501 pin#9?
NO
Check R537,R536,C521
Check P501 Connector and Capstan Motor.

B. Playback picture doesn't appear

1) No VCR Playback Picture

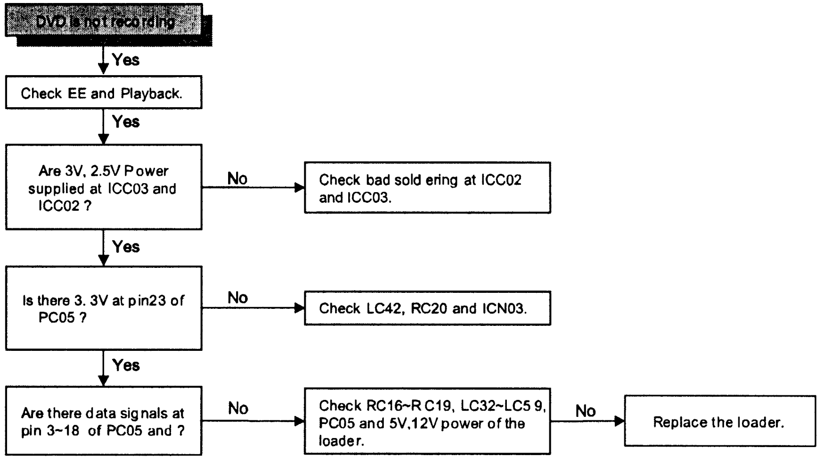

PB video signal missing.
YES
Is Envelope output from IC301 pin#79?
NO
Is 5V supplied at IC301 pin#91?
NO
Check POWER 5V.
YES
Is SW Pulse input at IC301 pin#70?
NO
Check IC501 pin#18.
YES
Clean head or Replace head.
YES
Is Y SIGNAL output at IC301 pin#46?
NO
Is 5V obtained at IC301 pin#24, 42,55,72,91?
NO
Check POWER 5V.
YES
Check and Replace IC301.
NO
Does X301(4.43MHz) oscillate?
YES
Check PATTERN
NO
Replace X301.
YES
Is Y SIGNAL input at IC301 pin#43?
NO
Check PATTERN
YES
Is VIDEO SIGNAL output at IC301 pin#65?
NO
Check and replace IC301.
YES
Same as EE MODE check.

2) No DVD Playback Picture

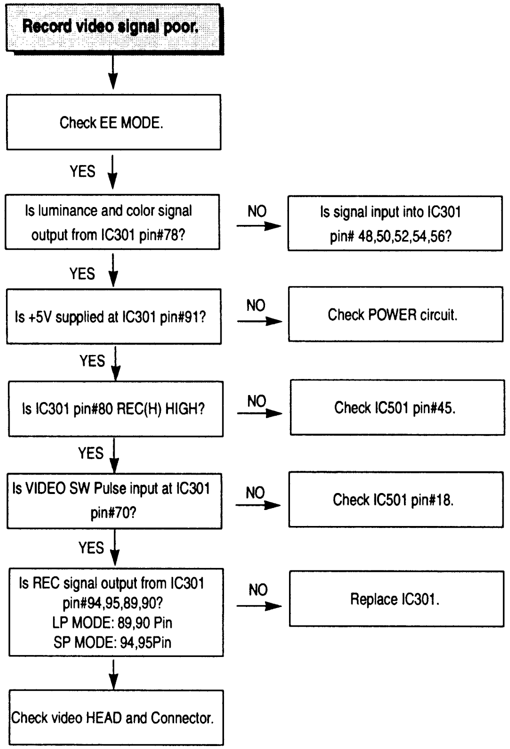

No DVD Video signal
YES
Are there video signal at pin #1,3,5,7,9,11 of P100?
NO
Check PC01, ICN01(CVBS out, Y/C Out, Component Out)
NO
Check PC05, P821, 5V, 12V Power and cable connection
YES
Are there video output signal at JK601, JK101, JK102.
NO
CVBS: Check Pin #61 of IC301
RGB : Check Pin #21, 23,25 (Y.Pb, Pr),28,31 of IC103 (Y/C)

C. No Recording

1). DVD Part

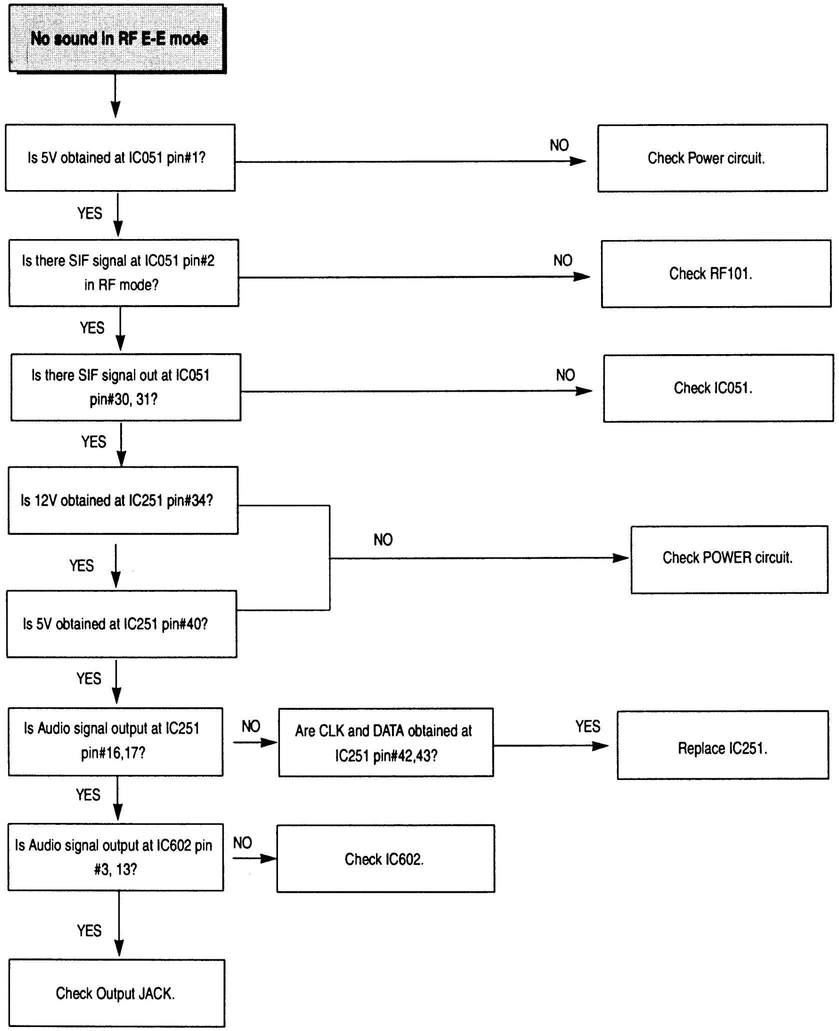

DVD is not recording
Yes
Check EE and Playback.
Yes
Are 3V, 2.5V Power supplied at ICC03 and ICC02 ?
No
Check bad sold ering at ICC02 and ICC03.
Yes
Is there 3. 3V at pin23 of PC05 ?
No
Check LC42, RC20 and ICN03.
Yes
Are there data signals at pin 3~18 of PC05 and ?
No
Check RC16~R C19, LC32~LC5 9, PC05 and 5V,12V power of the loader.
No
Replace the loader.

2) VCR Part

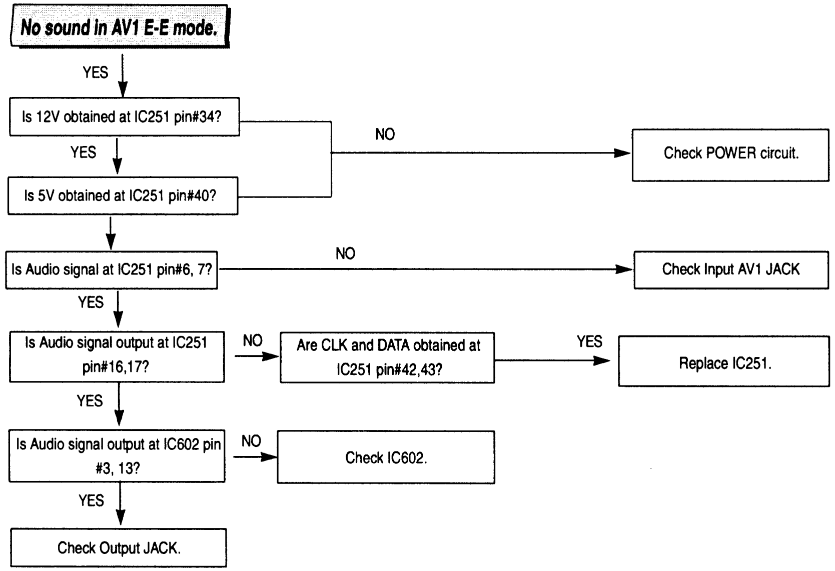

Record video signal poor.
Check EE MODE.
YES
Is luminance and color signal output from IC301 pin#78?
NO
Is signal input into IC301 pin# 48,50,52,54,56?
YES
Is +5V supplied at IC301 pin#91?
NO
Check POWER circuit.
YES
Is IC301 pin#80 REC(H) HIGH?
NO
Check IC501 pin#45.
YES
Is VIDEO SW Pulse input at IC301 pin#70?
NO
Check IC501 pin#18.
YES
Is REC signal output from IC301 pin#94,95,89,90? LP MODE: 89,90 Pin SP MODE: 94,95Pin
NO
Replace IC301.
Check video HEAD and Connector.

4. AUDIO (Hi-Fi MODEL)

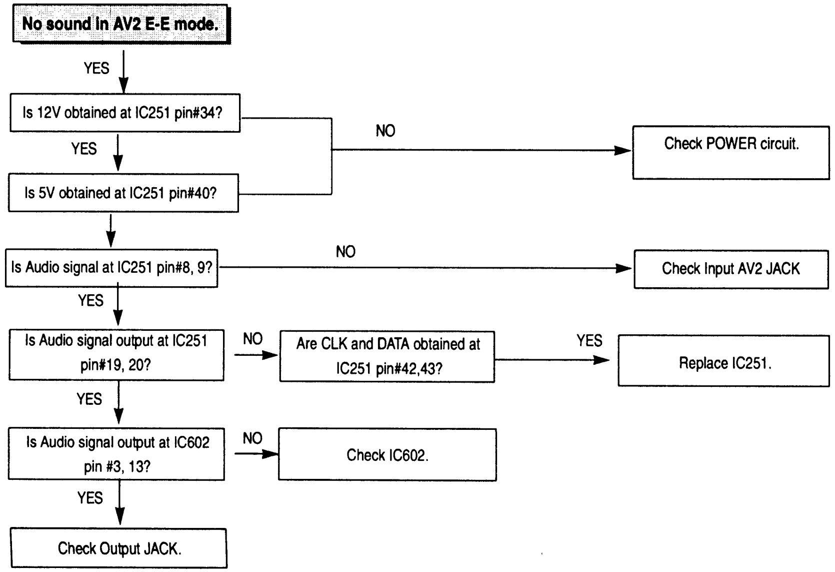
A. No sound in E-E mode
a. RF E-E


No sound in RF E-E mode
Is 5V obtained at IC051 pin#1?
NO
Check Power circuit.
YES
Is there SIF signal at IC051 pin#2 in RF mode?
NO
Check RF101.
YES
Is there SIF signal out at IC051 pin#30, 31?
NO
Check IC051.
YES
Is 12V obtained at IC251 pin#34?
NO
Check POWER circuit.
YES
Is 5V obtained at IC251 pin#40?
YES
Is Audio signal output at IC251 pin#16,17?
NO
Are CLK and DATA obtained at IC251 pin#42,43?
YES
Replace IC251.
YES
Is Audio signal output at IC602 pin #3, 13?
NO
Check IC602.
YES
Check Output JACK.

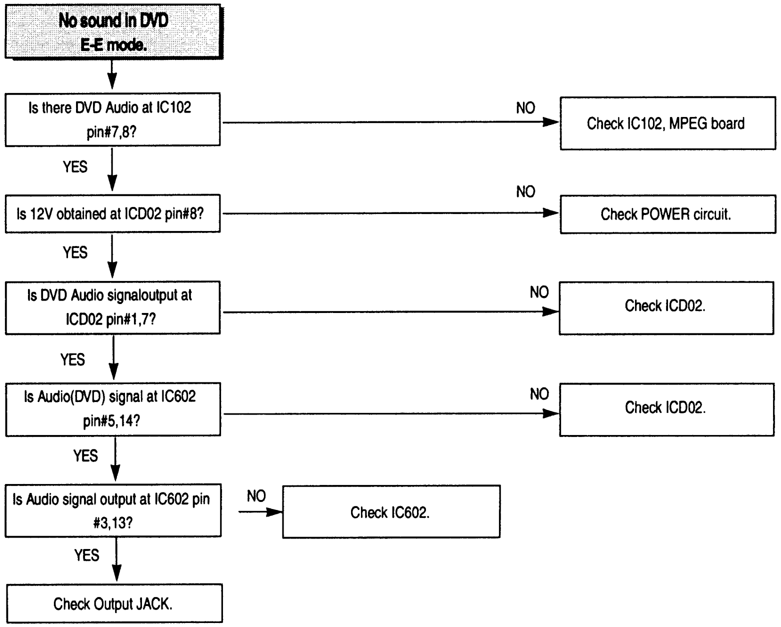
b. AV1 E-E


No sound in AV1 E-E mode.
YES
Is 12V obtained at IC251 pin#34?
YES
Is 5V obtained at IC251 pin#40?
NO
Check POWER circuit.
Is Audio signal at IC251 pin#6, 7?
NO
Check Input AV1 JACK
YES
Is Audio signal output at IC251 pin#16,17?
NO
Are CLK and DATA obtained at IC251 pin#42,43?
YES
Replace IC251.
YES
Is Audio signal output at IC602 pin #3, 13?
NO
Check IC602.
YES
Check Output JACK.

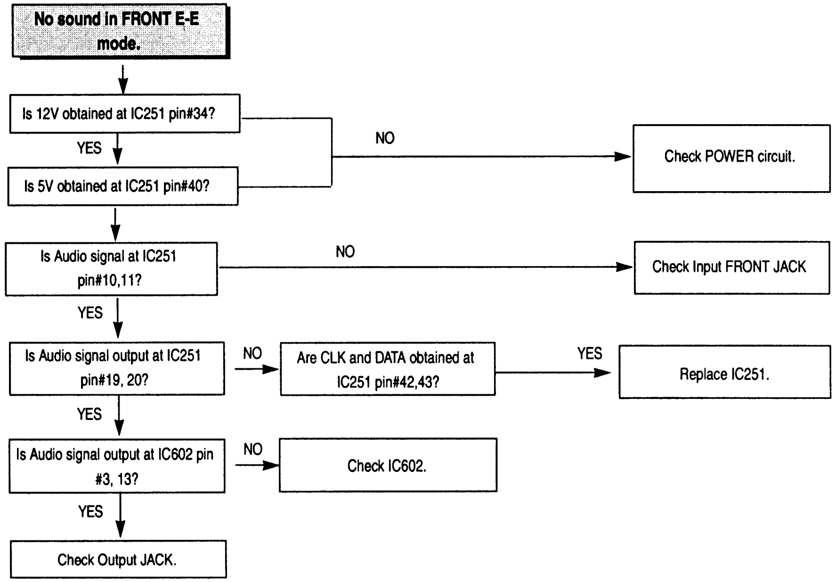
c. AV2 E-E


No sound in AV2 E-E mode.
YES
Is 12V obtained at IC251 pin#34?
YES
Is 5V obtained at IC251 pin#40?
NO
Check POWER circuit.
Is Audio signal at IC251 pin#8, 9?
NO
Check Input AV2 JACK
YES
Is Audio signal output at IC251 pin#19, 20?
NO
Are CLK and DATA obtained at IC251 pin#42,43?
YES
Replace IC251.
YES
Is Audio signal output at IC602 pin #3, 13?
NO
Check IC602.
YES
Check Output JACK.

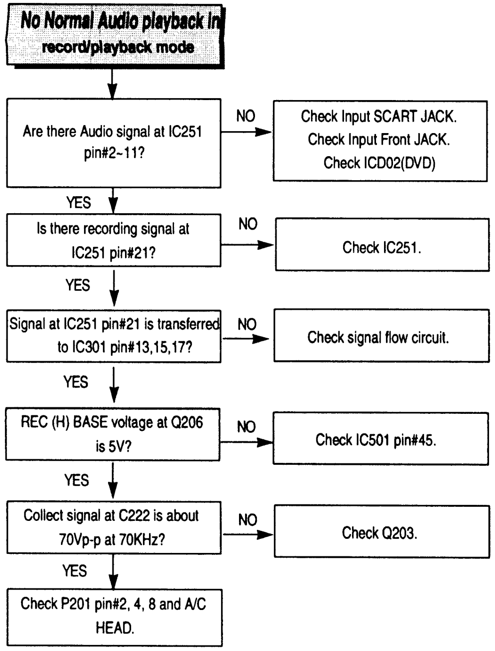
d. DVD E-E


No sound in DVD E-E mode.
Is there DVD Audio at IC102 pin#7,8?
NO
Check IC102, MPEG board
YES
Is 12V obtained at ICD02 pin#8?
NO
Check POWER circuit.
YES
Is DVD Audio signaloutput at ICD02 pin#1,7?
NO
Check ICD02.
YES
Is Audio(DVD) signal at IC602 pin#5,14?
NO
Check ICD02.
YES
Is Audio signal output at IC602 pin #3,13?
NO
Check IC602.
YES
Check Output JACK.

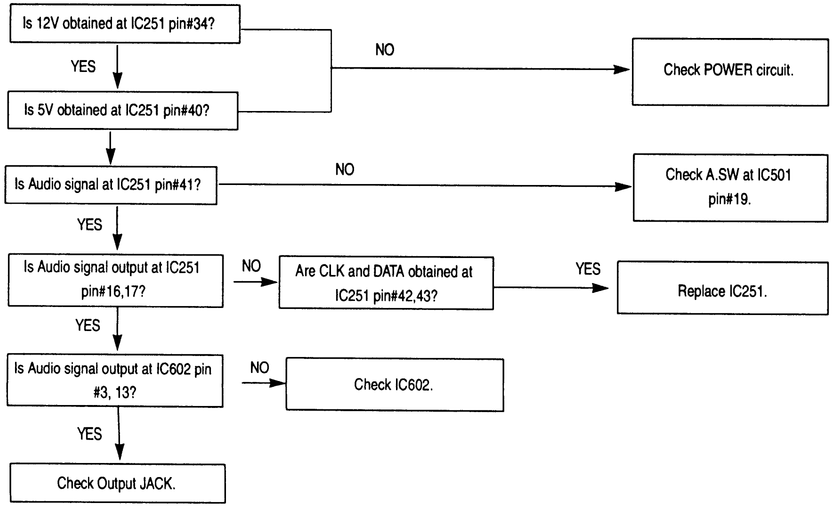
e. FRONT E-E


No sound in FRONT E-E mode.
Is 12V obtained at IC251 pin#34?
YES
Is 5V obtained at IC251 pin#40?
NO
Check POWER circuit.
Is Audio signal at IC251 pin#10,11?
NO
Check Input FRONT JACK
YES
Is Audio signal output at IC251 pin#19, 20?
NO
Are CLK and DATA obtained at IC251 pin#42,43?
YES
Replace IC251.
YES
Is Audio signal output at IC602 pin #3, 13?
NO
Check IC602.
YES
Check Output JACK.

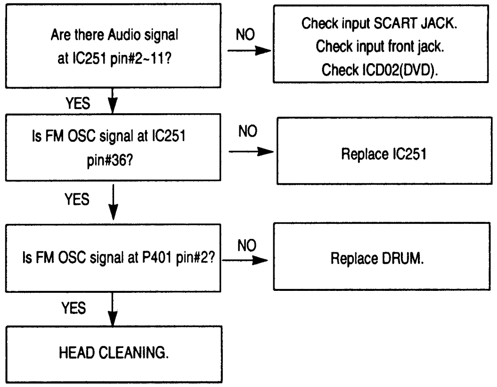
B. No NORMAL AUDIO playback in record/playback mode(Check in REC mode)


No Normal Audio playback in record/playback mode
Are there Audio signal at IC251 pin#2~11?
NO
Check Input SCART JACK. Check Input Front JACK. Check ICD02(DVD)
YES
Is there recording signal at IC251 pin#21?
NO
Check IC251.
YES
Signal at IC251 pin#21 is transferred to IC301 pin#13,15,17?
NO
Check signal flow circuit.
YES
REC (H) BASE voltage at Q206 is 5V?
NO
Check IC501 pin#45.
YES
Collect signal at C222 is about 70Vp-p at 70KHz?
NO
Check Q203.
YES
Check P201 pin#2, 4, 8 and A/C HEAD.

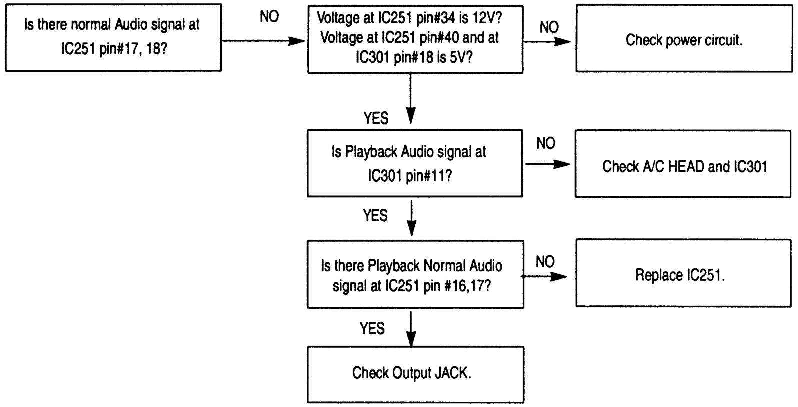
C. No Hi-Fi Playback audio(PLAY MODE)


Is 12V obtained at IC251 pin#34?
YES
Is 5V obtained at IC251 pin#40?
NO
Check POWER circuit.
Is Audio signal at IC251 pin#41?
NO
Check A.SW at IC501 pin#19.
YES
Is Audio signal output at IC251 pin#16,17?
NO
Are CLK and DATA obtained at IC251 pin#42,43?
YES
Replace IC251.
YES
Is Audio signal output at IC602 pin #3, 13?
NO
Check IC602.
YES
Check Output JACK.

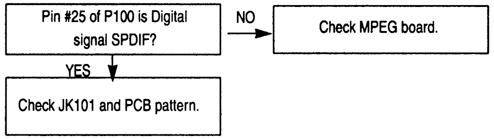
D. No Hi-Fi playback in record/playback mode (REC MODE)


Are there Audio signal at IC251 pin#2~11?
NO
Check input SCART JACK. Check input front jack. Check ICD02(DVD).
YES
Is FM OSC signal at IC251 pin#36?
NO
Replace IC251
YES
Is FM OSC signal at P401 pin#2?
NO
Replace DRUM.
YES
HEAD CLEANING.

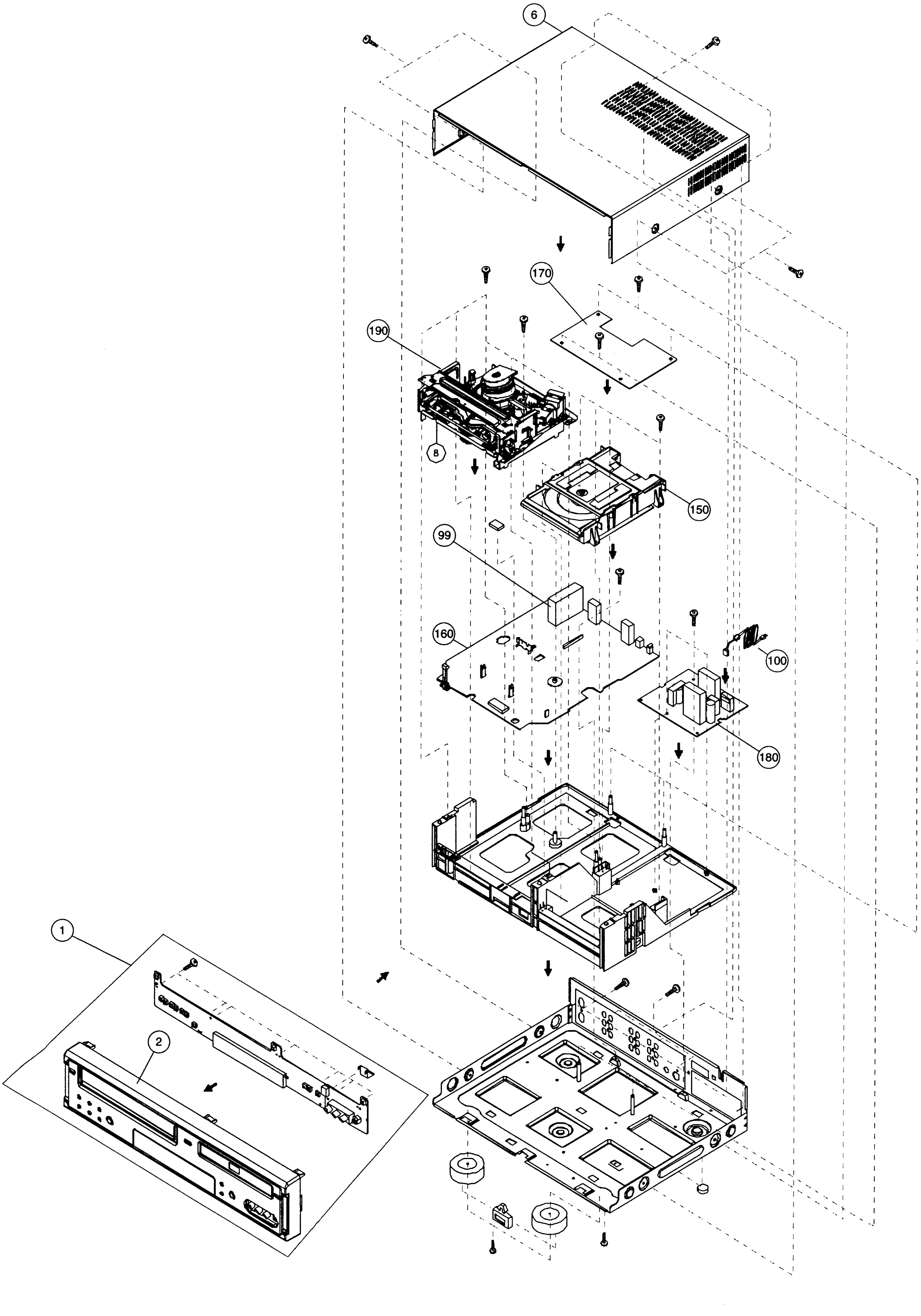
E. No NORMAL AUDIO playback (PLAY MODE)


Is there normal Audio signal at IC251 pin#17, 18?
NO
Voltage at IC251 pin#34 is 12V? Voltage at IC251 pin#40 and at IC301 pin#18 is 5V?
NO
Check power circuit.
YES
Is Playback Audio signal at IC301 pin#11?
NO
Check A/C HEAD and IC301
YES
Is there Playback Normal Audio signal at IC251 pin #16,17?
NO
Replace IC251.
YES
Check Output JACK.

F. No Sound in JK101 COAXIAL Jack.


Pin #25 of P100 is Digital signal SPDIF?
NO
Check MPEG board.
YES
Check JK101 and PCB pattern.

Explosionszeichnung und Ersatzteillisten
Exploded View and Spare Parts Lists


6
170
190
8
150
99
160
100
180
1
2

GRUNDIG

Ersatzteilliste
Spare Parts List

NUR FÜR INTERNEN GEBRAUCH
FOR INTERNAL USE ONLY

VIDEO/DVD

2 / 2005

GDR 6460 VCR

MATERIAL-NR. / PART NO.: 774010835100
BESTELL-NR. / ORDER NO.: GMK3500 SILBER/SILVER

POS. NR. POS. NO.	ABB. FIG.	MATERIAL-NR. PART NUMBER	ANZ. QTY.	BEZEICHNUNG Ⓓ	DESCRIPTION (GB)
		774010835100		GDR 6460 VCR SILVER **TAUSCHGERAET**	GDR 6460 VCR SILVER **EXCHANGE SET**
0001.000		759551123900		FRONTPLATTE KPL.(M. BEDIENMODUL)	FRONT PANEL CPL. (W. CONTROLBOARD)
0002.000		759551124000		FRONT ABDECKUNG	FRONT COVER
0006.000		759551121400		GEHAEUSE OBERTEIL	COVER TOP
0097.000		759551117100		SCHALTER MODUS	SWITCH MODE
0098.000		759551117200		SCHALTER AUFNAHMESPERRE	SWITCH DETECT REC.
0099.000		759551117000		TUNER 3 IN 1	TUNER 3 IN 1
0100.000	⚠	759551116800		NETZKABEL	POWER CABLE
0150.000	⚠	759551120900		LAUFWERK DVD	DRIVE MECHANISM DVD
0160.000	⚠	759551120700	X	LP-CHASSISMODUL KEIN E-TEIL	CHASSISBOARD NO SPARE PART
0170.000		275990137300	X	LP-MPEG MODUL	MPEG BOARD
0180.000	⚠	275990137400		LP-NETZTEILMODUL	POWER SUPPLY
0190.000		759551120800	X	LAUFWERK VIDEO KEIN E-TEIL	DRIVE MECHANISM VIDEO NO SPARE PART
0900.000		720117136400		FERNBEDIENUNG	REMOTE CONTROL
		720116041000		BEDIENUNGSANLEITUNG D	INSTRUCTION MANUAL D
		720116041100		BEDIENUNGSANLEITUNG F/I	INSTRUCTION MANUAL F/I
		720116041200		BEDIENUNGSANLEITUNG NL/DK	INSTRUCTION MANUAL NL/DK
		720116041300		BEDIENUNGSANLEITUNG E/PL	INSTRUCTION MANUAL E/PL
		720116041400		BEDIENUNGSANLEITUNG D/GB	INSTRUCTION MANUAL D/GB
		720100483500		SERVICE MANUAL D/GB	SERVICE MANUAL D/GB

X = SIEHE GESONDERTE E-LISTE
X = SEE SEPARATE PARTS LIST

Es gelten die Vorschriften und Sicherheitshinweise gemäß dem Service Manual "Sicherheit", Mat.-Nummer 720108000001, sowie zusätzlich die eventuell abweichenden, landesspezifischen Vorschriften!

⚠ (!)

The regulations and safety instructions shall be valid as provided by the "Safety" Service Manual, part number 720108000001, as well as the respective national deviations.

ÄNDERUNGEN VORBEHALTEN / SUBJECT TO ALTERATION

GRUNDIG

Ersatzteilliste
Spare Parts List

NUR FÜR INTERNEN GEBRAUCH
FOR INTERNAL USE ONLY

VIDEO/DVD

2 / 2005

LP-MPEG MODUL
MPEG BOARD

MATERIAL-NR. / PART NO.: 275990137300

POS. NR. POS. NO.	ABB. FIG.	MATERIAL-NR. PART NUMBER	ANZ. QTY.	BEZEICHNUNG Ⓓ	DESCRIPTION ⒼⒷ
		275990137300		LP-MPEG MODUL	MPEG BOARD

POS. NR. POS. NO.	MATERIAL-NR. PART NUMBER	BEZEICHNUNG DESCRIPTION	POS. NR. POS. NO.	MATERIAL-NR. PART NUMBER	BEZEICHNUNG DESCRIPTION
DN 01	759535015400	CHIP DIODE RLS 4148			
DN 02	759535015400	CHIP DIODE RLS 4148			
IC C02	759551119400	IC AP1184K5A			
IC C03	759551119400	IC AP1184K5A			
IC M01	759551119500	IC G2995F1UC			
IC M02	759551119600	IC ADD8616A8A-5B 256MB			
IC M03	759551119600	IC ADD8616A8A-5B 256MB			
IC M05	759551119700	IC SN74LVC16373ADGGR			
IC M06	759551119800	IC MX29LV160ATTC-70 48PIN T			
IC N01	759551075800	IC DMN8602			
IC V03	759551119900	IC SAA7115 100PIN QFP			
XN 01	759551120000	QUARZ 13.500 MHZ 30PPM SMD			
XV 01	759880551300	OSZILLATOR KRISTALL 24.576M			

Es gelten die Vorschriften und Sicherheitshinweise gemäß dem Service Manual "Sicherheit", Mat.-Nummer 720108000001, sowie zusätzlich die eventuell abweichenden, landesspezifischen Vorschriften!

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ÄNDERUNGEN VORBEHALTEN / SUBJECT TO ALTERATION

GRUNDIG

Ersatzteilliste
Spare Parts List

NUR FÜR INTERNEN GEBRAUCH
FOR INTERNAL USE ONLY

VIDEO/DVD

2 / 2005

LAUFWERK VIDEO
DRIVE MECHANISM VIDEO

MATERIAL-NR. / PART NO.: 759551120800

POS. NR. POS. NO.	ABB. FIG.	MATERIAL-NR. PART NUMBER	ANZ. QTY.	BEZEICHNUNG Ⓓ	DESCRIPTION ⒼⒷ
		759551120800		LAUFWERK VIDEO KEIN E-TEIL	DRIVE MECHANISM VIDEO NO SPARE PART
0001.000		759551120200		CAPSTAN MOTOR	CAPSTAN MOTOR
0002.000		759551120600		BANDTROMMEL KPL	TRUM ASSY
0003.000		759551121000		A/C KOPF	A/C HEAD
0004.000		759551120300		LADEEINHEIT LINKS	LOADING UNIT LEFT
0005.000		759551120400		LADEEINHEIT RECHTS	LOADING UNIT RIGHT
0006.000		759551120500		RIEMEN 71 X 2 X 2 MM	BELT 71 X 2 X 2 MM
0007.000		759551121200		WICKELTELLERBREMSE LINKS	S BRAKE ASSY
0008.000		759551121300		WICKELTELLERBREMSE RECHTS	T BRAKE ASSY
0009.000		759551121100		LOESCHKOPF	FULL ERASE HEAD
0010.000		759551123200		ANDRUCKROLLENHEBEL KPL.	PINCK LEVER TOTAL
0011.000		759551123800		SCHWENKRAD KPL.	IDLER WHEEL

Es gelten die Vorschriften und Sicherheitshinweise gemäß dem Service Manual "Sicherheit", Mat.-Nummer 720108000001, sowie zusätzlich die eventuell abweichenden, landesspezifischen Vorschriften!

⚠ (!)

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ÄNDERUNGEN VORBEHALTEN / SUBJECT TO ALTERATION